DOCUMENT RESUME

ED 244 040 UD 023 585

AUTHOR Oxford-Carpenter, Rebecca; And Others
TITLE Demographic Projections to the Year 2000 of Limited English Proficient Hispanic Accessions in the U.S. Army. Research Report 1349.
INSTITUTION Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.
PUB DATE Oct 83
GRANT DAAG-29-81-D-0100
NOTE 70p.; Submitted by the Instructional Technology Systems Technical Area. Army Project Number 2Q162722A791.
PUB TYPE Statistical Data (110) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Age; Armed Forces; *Ethnic Groups; *Hispanic Americans; Individual Characteristics; *Limited English Speaking; *Military Personnel; *Sex Differences
IDENTIFIERS *Army; *Demographic Projections

ABSTRACT

This report presents background, methodology, findings, and implications regarding the generation of demographic projections to the year 2000 of limited English proficient Hispanic accessions in the U.S. Army. Projections are made for males and females, various Hispanic ethnic groups, and age bands within the accession age range of 17-35. Results show that Army accessions in all Hispanic ethnic groups are projected to increase substantially in number from now to the year 2000. Puerto Rican accession rates are more than twice as high as rates for other Hispanic ethnic groups. Current and projected accessions are much lower for Hispanic females than for Hispanic males. Males have much higher rates and levels of limited English proficiency (LEP) than females. Puerto Rican LEP rates exceed (in some categories by twice the number) the LEP rates of other Hispanic ethnic groups. The general pattern is one of increase in limited English proficiency in the Army to the year 2000. Results point to the need for continued, high quality English instruction, suitable selection and classification procedures, awareness of cultural differences, and improved data collection methods. (Author/CMG)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

(ED)

Research Report 1349

MAY 15 1984

DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U.S. ARMY

ED244040

Rebecca Oxford-Carpenter
Army Research Institute

Louis Pol
Memphis State University

Murray Gendell
Georgetown University

INSTRUCTIONAL TECHNOLOGY SYSTEMS TECHNICAL AREA
TRAINING RESEARCH LABORATORY

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

U. S. Army
Research Institute for the Behavioral and Social Sciences

October 1983

Approved for public release; distribution unlimited.

UD023585

U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

L. NEALE COSBY
Colonel, IN
Commander

Research accomplished under contract
for the Department of the Army

Battelle Laboratories

Technical Review by

Harold Wagner
Joan Harman
M. S. Fischl

NOTICES

DISTRIBUTION: Primary distribution of this report has been made by ARI. Please address correspondence concerning distribution of reports to: U.S. Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-TST, 5001 Eisenhower Avenue, Alexandria, Virginia 22333.

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Research Report 1349	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U.S. ARMY		5. TYPE OF REPORT & PERIOD COVERED Final 23 Feb - 8 July 1983 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Rebecca Oxford-Carpenter, ARI; Louis Pol, Memphis State University, and Murray Gendell, Georgetown University		8. CONTRACT OR GRANT NUMBER(s) DAAG 29-81-D-0100
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q162722A791/5110
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709		12. REPORT DATE October 1983 13. NUMBER OF PAGES 69
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Army Accessions Demographic Projections Hispanic Spanish Origin Mexican Puerto Rican Limited English Proficiency English-as-a-Second-Language Basic Skills Education Program		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report presents background, methodology, findings, and implications regarding the generation of demographic projections to the year 2000 of limited English proficient Hispanic accessions in the U.S. Army. Projections are made for males and females, various Hispanic ethnic groups, and age bands within the accession age ranges of 17-35. Results showed that Army accessions in all Hispanic ethnic groups are projected to increase substantially in number from now to the year 2000. Puerto Rican accession rates are more than twice as high as rates for other Hispanic ethnic groups.		

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

i SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Item 20 (Continued)

Current and projected accessions are much lower for Hispanic females than for Hispanic males. Males have much higher rates and levels of limited English proficiency (LEP) than females. Pureto Rican LEP rates exceed (in some categories by twice the number) the LEP rates of other Hispanic ethnic groups. The general pattern is one of increase in limited English proficiency in the Army to the year 2000.

Research Report 1349

DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U.S. ARMY

Rebecca Oxford-Carpenter
Army Research Institute

Louis Pol
Memphis State University

Murray Gendell
Georgetown University

Submitted by:
Zita Simutis, Chief
INSTRUCTIONAL TECHNOLOGY SYSTEMS TECHNICAL AREA

Approved as technically adequate
and submitted for publication by
Harold F. O'Neil, Jr., Director
TRAINING RESEARCH LABORATORY

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333

Office, Deputy Chief of Staff for Personnel
Department of the Army

October 1983

Army Project Number
2Q162722A791

Training Research

Approved for public release; distribution unlimited.

ARI Research Reports and Technical Reports are intended for sponsors of R&D tasks and for other research and military agencies. Any findings ready for implementation at the time of publication are presented in the last part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

FOREWORD

The Training Research Laboratory of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) performs research and development in areas related to military training. Of special interest is information pertaining to numbers and types of soldiers who need English-as-a-second-language (ESL) instruction due to their limited proficiency in English. The majority of ESL-eligible soldiers are Hispanic, so the Army has a great concern for knowing more about the size and composition of its Hispanic ESL-eligible population. This report provides information on that population in the form of demographic projections to the year 2000 by age, sex, and ethnic group.

This investigation was funded by the Training Research Laboratory as Scientific Services Program Contract number DAAG 29-81-D-0100. The research was conducted at ARI, but the contract was handled through the Army Research Office and Battelle Laboratories, both of Research Triangle Park, North Carolina.

It is expected that the information reported here will be of use to policy makers and scientists concerned with military training, education, recruitment, selection, classification, personnel utilization, and retention.

Edgar M. Johnson

EDGAR M. JOHNSON
Technical Director

ACKNOWLEDGEMENTS

The authors are especially grateful to Dr. Veronica Thomas for her tireless data analysis efforts. We also thank the following persons for their helpful reviews: Dr. Joan Harman, Dr. M. A. Fischl, Dr. Janice Redish, Frances Grafton and LTC (Ret.) Clinton Anderson. Essential Technical and production support came from Joseph Duvall, Bettie Teevan, Martin Gendell, Kate Dorrell, and Deborah Lucas.

DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000
OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U. S. ARMY

EXECUTIVE SUMMARY

Requirement:

To improve the Army's capability for planning its training and manpower programs by projecting the number of limited English proficient (LEP) Hispanic (Spanish origin) accessions in the Army to the year 2000.

Procedure:

The projection procedure combines three sets of data: (1) projections of the Spanish origin population in the U. S. in accession-eligible ages, (2) age-specific rates of Hispanic Army accessions, and (3) limited English proficiency (LEP) rates for Hispanics. Projections are made separately for males and females in the following age intervals: 17-18, 19-20, 21-25 (disaggregated to 21-22 and 23-25 for males), and 26-35. Two different weighting factors are used to generate alternative LEP projections.

Findings:

The Hispanic population in Army accession age ranges is projected to grow substantially between 1980 and the year 2000. Hispanic Army accession rates are projected to increase to a peak at ages 19-20, followed by a decline. Puerto Rican accession rates are more than twice as high as rates for other Hispanic ethnic groups. Large increases are projected for Army accessions in all Hispanic ethnic groups, particularly Puerto Ricans. Current and projected accessions are much lower for Hispanic females than for Hispanic males. Males have much higher rates of limited English proficiency than females. The Hispanic female LEP rate is about one-fourth the size of the Hispanic male LEP rate. Puerto Rican LEP rates exceed (in some categories by twice the number) the LEP rates of other Hispanic ethnic groups. Between one-fourth and one-third of all Hispanic accessions were estimated to be limited in English proficiency in 1980 and are projected to be similarly limited in the year 2000. The general pattern is one of increase in the total number of limited English proficient accessions in the Army from 1980 to 2000.

Utilization of Findings:

This report has utility for scientists and administrators in military recruitment, selection, classification, training, personnel utilization, and retention, because it provides information on an important segment of the Army population: limited English proficient Hispanic accessions. Results point to the need for continued, high quality English instruction, suitable selection and classification procedures, awareness of cultural differences, and improved data collection methods.

DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000
OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U.S. ARMY

CONTENTS

Page

THE ARMY HAS A NEED FOR DATA ON HISPANIC ACCESSIONS. 1

THE INVESTIGATION FOCUSES ON LIMITED ENGLISH PROFICIENT HISPANICS 1

RELATED RESEARCH EMPHASIZES HISPANIC GROWTH. 3

THE METHODOLOGY COMBINES THREE DATA SETS 4

THE RESULTS EXHIBIT LARGE INCREASES IN MANY CATEGORIES 4

How the tables are organized 5

Hispanic population projections show substantial increases 5

Puerto Ricans lead Hispanic accession projections. 6

Puerto Ricans have the highest LEP or ESL eligibility rates. 6

Comparative results show trends and differences. 7

The summary of results indicates Hispanic increases and sex differences. 8

THE ALTERNATIVE CONTROL ADJUSTMENT IS PROBABLY BETTER THAN THE TRADOC CONTROL ADJUSTMENT 9

THE PROJECTIONS HAVE IMPLICATIONS FOR ARMY INSTRUCTIONAL AND MANPOWER PROGRAMS. 10

REFERENCES 13

APPENDIX A. RELATED RESEARCH COVERS GENERAL DEMOGRAPHIC STUDIES AND ARMY RESEARCH. A-1

General demographic research shows high Hispanic growth rates. . . .A-1

The summary of general demographic research focuses on increased Hispanic growth. A-7

Army-related research shows sizeable number of Hispanic limited English proficient accessions. A-7

The summary of Army-related research on Hispanics and ESL eligibles emphasizes Puerto Ricans A-10

APPENDIX B. THE PROJECTION METHOD HAS THREE KEY PARTS B-1

The projection formula combines three broad data sets. B-1

The Hispanic population methodology uses data from the Population Reference Bureau and the Immigration and Naturalization Service B-2

The Hispanic accession projection methodology includes Army accession data and Census Bureau projections B-3

The Hispanic LEP or ESL eligibility projection methodology uses TRADOC and EMF data B-5

The methodology for comparisons involves disparate sources B-7

APPENDIX C. TABLES. C-1

DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U. S. ARMY

THE ARMY HAS A NEED FOR DATA ON HISPANIC ACCESSIONS

In early 1981 educational officers in the Army Adjutant General's Office asked the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) to provide demographic projections of Hispanic recruits who were limited in English proficiency and hence eligible for the Army's English-as-a-second language (ESL) instruction provided in the Basic Skills Education Program (BSEP). Interest in projections of Hispanic recruits, especially those with English language deficiencies, also became evident in other offices within the Department of the Army. Inclusion of the topic of Hispanic limited English proficient soldiers in the continuous, long-range planning of the Department of the Army and the Army Research Institute attests to the growing need to accommodate the needs of such soldiers.

This report presents demographic projections to the year 2000 of limited English proficient Hispanic accessions in the Army. Projections are made for males and females, various Hispanic ethnic groups, and age bands within the accession age range of 17 to 35.

Because this report is intended for policy use, we first present our focus and a very short summary of related research, followed immediately by results, discussion, implications, and references. Appendices contain indepth coverage of related research, technical details about the methodology we used, and tables of results.

THE INVESTIGATION FOCUSES ON LIMITED ENGLISH PROFICIENT HISPANICS

In this investigation, the ultimate focus is on a particular type of soldier: the Hispanic accession who is limited in English language proficiency. As used here, the term "accession" signifies a recruit who has not only applied to join the Army but has also been accepted and has signed a contract. In this report we use total accession figures that include both nonprior-service recruits and prior-service recruits, the latter of whom comprise about 8% of all recruits. Our figures include active Army accessions only, not National Guard and Army Reserve accessions, because the initial requests for information which we received concerned only active Army accessions. Making projections of National Guard and Army Reserve accessions would necessitate a separate investigation, as their composition and accession trends are different from those of active Army accessions. We include in our figures both "delayed entries" and "direct ships," the former being soldiers who elect to delay their entry after signing the contract to join the Army and the latter being soldiers who enter immediately.

The terms limited English proficiency, or "LEP," and "ESL eligible" are used synonymously in this report, because limited English proficiency is the criterion for being eligible for ESL programs in the Army. "LEP" is used frequently in recent demographic research (Oxford, Pol, Lopez, Stupp, Gendell, & Peng, 1981; Peng, Oxford, Stupp, & Pol, 1982; Pol, Oxford-Carpenter, & Peng, in press). "ESL-eligible" is a programmatic term used for classification purposes in the Army's training and education arena. The operational definition of "LEP" or "ESL-eligible" in the Army at the current time is a score of less than 70 on the English Comprehension Level Test (ECLT) and/or command referral of an individual soldier for ESL instruction. The ECLT is a test developed by the Defense Language Institute English Language Center to assess English proficiency. Two-thirds of the test cover a combination of listening and reading, and the balance is purely reading. Further information on the test is found in Oxford-Carpenter, Harman, and Redish (1983).

Projections of Hispanic ESL-eligible accessions are important, because 95% to 95% of Army ESL students are native Spanish speakers (Holland, Rosenbaum, Stoddart, & Redish, 1982; Oxford-Carpenter, Harman, & Redish, 1983). These projections are of great interest to Army educators and trainers, particularly those involved in planning and conducting ESL programs. Individuals concerned with personnel selection and classification also need to know how many limited English proficient soldiers may be entering the Army in the next two decades.

"Hispanic" and "Spanish origin" are used interchangeably here to encompass individuals whose origin is Mexican, Puerto Rican, Cuban, Central American, South American, Spanish, or other related backgrounds. "Spanish origin" is the official term used by the Census Bureau to designate these backgrounds, but "Hispanic" is often used as a shorthand name.

It is helpful to distinguish among the terms "population projections," "forecasts," and "estimates." Simply put, a population projection merges a set of population data, such as the age and sex composition of a population, with assumptions concerning future demographic behavior (fertility, mortality, and migration rates). This merging generates population numbers for some specified year(s) in the future. Generally, alternative projections are provided by varying the assumptions, because several demographic scenarios may be possible. At the present time, the U.S. Bureau of the Census produces four sets of projections for the U.S. population by varying these demographic assumptions.

On the other hand, it is sometimes the case that the producer of the projections, for one reason or another, assigns a higher probability to one set of assumptions than to all other assumptions. In this instance, one set of numbers is produced, and this is called a "forecast." The difference between a projection and a forecast concerns the degree of confidence the producer has in any one set of assumptions being more likely to hold than all others.

The other term frequently used in similar contexts is "estimate." Estimates are usually generated for intercensal time periods (i.e., periods between the ten-year, or decennial, censuses) and after the estimate year in question. The estimates published by the U.S. Bureau of the Census through the federal-state cooperative program usually appear two years after a given estimate year has passed. The procedures used to create population estimates are frequently different from those used to yield projections.

This investigation is concerned with population estimates for 1980 and, more importantly, population projections for 1985, 1990, 1995, and 2000. The obvious use for a population projection is to provide a set of numbers on which to base planning decisions. However, an equally important purpose may be analytic in nature. Any population projection will contain some error. As one makes projections further away from the current year, the error can be greatly magnified. However, by analyzing errors--that is, periodically ascertaining the differences between projected and actual numbers and attempting to isolate the sources of the differences--errors in the future may be reduced. Error sources, such as faulty fertility or mortality assumptions, can be identified and subsequent assumptions adjusted.

RELATED RESEARCH EMPHASIZES HISPANIC GROWTH

Two areas of related research are important for the current investigation: general demographic research on Hispanics and Army-related research on Hispanics and ESL eligibles. We present here a brief synopsis of this research.

Many investigations have been conducted concerning Hispanic population growth. The overall results show that Hispanics are growing faster than other ethnic and language groups in our country. It is questionable, however, whether Hispanics will outstrip Blacks in number as the largest U.S. minority group by the end of the century, as some have asserted. The unknown number of illegal Hispanic immigrants would affect the balance.

The Hispanic population is younger than the total U.S. population and is growing faster than the total U.S. population. The total U.S. population is actually shrinking in accession age ranges. To be specific, the most rapidly growing age group in the total U.S. population is 35- to 44-year-olds. The U.S. population of 18- and 19-year-olds, the prime group for Army accession, has been projected to decline from 8.5 million in 1981 to 6.5 million in 1995 (a 24% drop) and then rise somewhat to 7.5 in the year 2000 (a 12% decrease from the 1981 level). Hispanics, in contrast, are projected to increase from 7% to 10.8% of the total U.S. population in the accession age range by the year 2000. Therefore, Hispanics could provide a source of available and talented manpower for the Army as its overall available manpower pool shrinks.

As indicated by Army research, there is a sizeable number of limited English proficient soldiers in the Army, and most of them are well-educated Puerto Ricans. Larger percentages of Hispanic and Black Army accessions than White Army accessions have graduated from high school. The economic trends that influence accession may affect minority groups, such as Hispanics, differently from whites. Although Blacks are the largest minority group in the Army, the high Hispanic growth rate will probably change the numbers of Hispanics in the total military manpower pool.

See Appendix A for a more extensive discussion of related research, including specific citations, concerning both general and Army-related demographics.

THE METHODOLOGY COMBINES THREE DATA SETS

The projection procedure combines three sets of data: (1) projections of the Spanish origin population in the U. S. in accession-eligible ages, i.e., 17-35, (2) age-specific rates of Hispanic Army accessions, and (3) limited English proficiency rates for Hispanics. Projections are made separately for males and females in the following age intervals: 17-18, 19-20, 21-25 (disaggregated to 21-22 and 23-25 for males), and 26-35. The Cohort Component Prevalance Rate methodology, developed for LEP projections in the general U.S. population, was used to project numbers of LEP Hispanic accessions to the year 2000. Two different weighting factors were used to generate alternative LEP projections. Both weights produce relatively conservative projections which can be considered the "lower bounds" for future planning.

Major data sources include Army accession tapes, U.S. Census Bureau projections, Hispanic projections developed by the Population Research Bureau, and LEP rates derived from current Army education and training data. The Population Reference Bureau is a nonprofit organization in Washington, D.C. interested in national and international demography.

Appendix B provides more information about the methodology we used in the investigation.

THE RESULTS EXHIBIT LARGE INCREASES IN MANY CATEGORIES

In this section we present first a description of the results tables and then an explanation of the results themselves. All tables are included in Appendix C.

How the Tables are Organized

Tables 1 through 4 contain the continental Hispanic population projections for Army-relevant ages (17-35) by sex, age, and ethnicity. These projections are provided by the Population Reference Bureau (Bouvier, Davis, & Haupt, 1983). In addition, we have disaggregated these projections, which were originally in five-year age intervals, to produce our own age bands.

Tables 5 through 7 contain Army accession rates by sex, age, and ethnicity. These rates are a product of accession data provided to us by the Army (the numerator of the rate) and 1980 Census data by sex, age, and ethnicity (the denominator of the rate).

In Tables 8 through 11 are found projections of Army accessions by sex, age, and ethnicity. These projects are generated by multiplying the accession rates in Tables 5 through 7 by the population projections in Tables 1 through 4.

Tables 12 and 13 provide the rates of limited English proficiency (LEP) or ESL eligibility for Hispanic accessions in various age, sex, and ethnic groups. These rates are calculated by dividing the Army ESL-eligible figures for sex, age, and ethnicity by the appropriate denominators for Hispanic Army accessions.

Tables 14 through 27 contain the ESL eligible (LEP) projections. They are the result of multiplying LEP rates from Tables 12 and 13 by the Army accession projections in Tables 8 through 11. Furthermore, the projections in Tables 14 through 20 are adjusted to reflect a more conservative TRADOC control total for ESL eligibles, while in Tables 21 through 27 a slightly less conservative weighting factor is used.

Tables 28 through 32 show comparisons that may be the most important data for key policy decisions. These comparisons are in the form of frequencies and percentages.

Hispanic Population Projections Show Substantial Increases

As can be seen in Tables 1 through 4 in Appendix C, the Hispanic population of the U.S. is projected to grow substantially between now and the year 2000. We mentioned in the review of related research, that this rate of growth is considerably larger than the rate for the Anglo population. Age differences are evident in the growth rates. For example, Table 1 shows that 17- to 18-year-old males are projected to increase by almost 24% (from 334,035 to 413,430), while 26- to 35-year-old males are projected to increase by 62% (from 1,194,740 to 1,937,310). The pattern for females is much the same.

Puerto Ricans Lead Hispanic Accession Projections

Tables 5 through 7 contain the Hispanic accession rates. The pattern shown in these tables indicates an increase in the rates from ages 17-18 to 19-20, where the rates peak, followed by a considerable decline as age increases. This is, of course, not an unusual pattern for Army accessions. The rates for Puerto Ricans are more than twice as high as the rates for the other Hispanic ethnic groups. Also, as expected, the rates of accession for females are much lower than for males.

Evident in Tables 8 through 11 is the relatively large projected increase (27% or 1,779 soldiers) in the number of Spanish origin Army accessions. However, as noted in the section on comparative results, Spanish origin accessions remain about 5% of total Army accessions. An increase is projected for all sex, age, and ethnic groups. Overall, male Hispanic accessions are projected to grow by 27% (from 5,733 to 7,293), while female Hispanic accessions are projected to grow by 32% (from 677 to 896). Of course, the female increase, while proportionally large, is small in actual numbers. In addition, among all Spanish origin accessions Puerto Ricans are the largest group, though the proportion of all Spanish origin accessions who are Mexican origin is increasing. Interestingly, the increase is much larger for Mexicans than for Puerto Ricans at ages 17-25. Although the rates of Hispanic accession are highest at ages 19-20 (see Tables 5 through 7), the numbers of projected Hispanic accessions are highest at ages 26-35 (see Table 8). The number of projected Hispanic female accessions is substantially smaller than the Hispanic male total.

Puerto Ricans Have the Highest Hispanic LEP or ESL Eligibility Rates

It can be seen in Tables 12 and 13 that there is considerable variation by sex, age, and ethnicity in Hispanic ESL eligibility or LEP rates. For males and females, except for the males in the Other Spanish (non-Mexican, non-Puerto-Rican) group, the peak in rates occurs at either the 19-20 or 21-25 age band. For males in the Other Spanish category, there is an increase in LEP rates at every age, moving from approximately 3% at ages 17-18 to 59.7% (the highest recorded LEP rate in this investigation) at ages 26-35. LEP rates also vary by sex, with males having considerably higher rates than females. Also, in seven out of eight categories for female Mexican and female Other Spanish, the LEP rate is zero. Finally, the LEP rate for Puerto Ricans is much higher than that of other Hispanic ethnic groups and in a few categories more than twice as high. The highest Puerto Rican LEP rate was for males ages 21-22 (45.4%).

The Hispanic ESL eligibility (LEP) projections appearing in Tables 14 through 20 are weighted to match TRADOC totals. These are the more conservative LEP projections. A table for Mexican females does not appear, because all of their LEP rates in Table 13 were zero. The overall Hispanic ESL-eligible or LEP pattern is one of increase--27% (from 1,437 to 1,822) for all Spanish origin males and 33% (from 46 to 61, although we must beware of large proportional increases from small numeric increases) for all Spanish origin

females. Note the similarity between the LEP projections by sex and the previously cited Army Hispanic projections by sex. Hispanic ESL-eligible males are projected to outnumber their female counterparts by 30 to 1 (in totals, 1,822 to 61) in the year 2000. The largest Hispanic ESL-eligible ethnic group is Puerto Rican, representing 83% (1,189 out of 1,437) of the total of Hispanic ESL-eligible males in 1980, though a decline to 75% (1,370 out of 1,822) of the total is projected by 2000. A more dramatic decline, 85% (39 out of 46) to 69% (42 out of 61), is projected for Puerto Rican females, although their small numbers make the significance of this decline moot. The peak LEP or ESL-eligible age for total Spanish origin, Puerto Rican, and Mexican is either 19-20 or 21-25, while that for Other Spanish is 26-35.

Adjusting by means of a higher alternative control total leads to substantially larger, somewhat less conservative projections in Tables 21 through 27, though the patterns discussed above (e.g., an increase in total Spanish origin LEP or ESL eligibles) remain the same due to the proportional increase utilized. Males increase 27% (from 2,080 to 2,637), and females increase 35% (from 66 to 89). For 1980 and 2000 the alternative control total yields a LEP figure 45% higher than the more conservative option for all Spanish origin males (a comparison of Tables 14 and 21) and 46% higher for all Spanish origin females (a comparison of Tables 15 and 22). To be specific, the Hispanic male ESL-eligible number for 1980 is 2,080 using the alternative control total, compared to 1,437 using the TRADOC control total; for the year 2000, parallel figures are 2,637 and 1,822. The Hispanic female ESL-eligible figure is 66 under the alternative control total and 46 under the TRADOC control total, with parallel figures for the year 2000 at 89 and 61. It must be remembered that both of these projection options yield relatively conservative figures, as previously discussed. Figures using the alternate control total are likely to be more accurate, as discussed later.

Comparative Results Show Trends and Differences

For policy purposes, some of the most important results are the comparative ones shown in Tables 28-32. These results show how certain target groups proportionally relate to larger populations.

Table 28 compares the total U.S. population ages 17-35 with the Hispanic, or Spanish origin, population in the same age range for the base year 1980 and the projection year 2000. These data do not include insular Puerto Ricans but do include continental Puerto Ricans. Results show that the Spanish origin population ages 17-35 in the U.S. is projected to increase from 5,247,765 in 1980 to 7,423,082 in the year 2000, as compared with a projected decrease in the total U.S. population in the same age group, from 75,091,000 in 1980 to 68,895,000 in the year 2000. The proportion of the 1980 U.S. population in those ages listed as Spanish origin is 7.0%, while in 2000 the proportion is 10.8%--a 3.8% increase. While the overall U.S. population in this age bracket is predicted to decrease by about 6 million between 1980 and the end of the century, in the same period the Spanish origin group in these ages is

projected to increase by about 2.2 million. Furthermore, the projected Spanish origin increase is at the conservative end of the scale. Macias (1977) reported that projections of the Spanish origin population (all ages) for the year 2000 were 6.7% to 21% of the total U.S. population, depending on assumptions used--compared with our figure of 10.8%.

In Table 29 are found Census-based comparisons of Blacks to total U.S. population ages 17-35 in 1980 and the year 2000. This table is included because of the frequently heard assertion that Hispanics will overtake Blacks in number and proportion of the U.S. population by the end of the century (see Macias, 1977; Lord & Barnes, 1983). Census-based data show that, at least for the age group 17-35, Blacks are projected to increase from 12.3% to 15.0% of the total U.S. population (i.e., a Black increase from 9,268,000 to 10,335,000). This increase of 2.7% is less than the Hispanic increase of 3.8%, which was mentioned in the preceding paragraph. However, according to these figures, Blacks are projected to represent a larger share than Hispanics in the total U.S. population in the year 2000: 15% for Blacks compared with 10.8% for Hispanics. These figures include some but certainly not all of the illegal Hispanic immigrants. The proportion of Hispanics in the total U.S. population would, of course, be larger if insular Puerto Ricans and all illegal Hispanic immigrants were included in the U.S. projections.

As seen in Table 30, the number of Hispanic accessions in 1980 is 6,410, compared with the total accession figure of 133,186 for that year. The Hispanic proportion of total Army accessions for 1980 is 4.8%. Our projection for Hispanic accessions in 1990 is 7,032, which is 5.2% of the Army's 1990 "objective" for total accessions. It is interesting to note that these figures are close to the percentage reported by Lord and Barnes (1983), who stated that non-Black minorities comprise about 5% of Army recruits. It must be explained that our percentages of 4.8% and 5.2% are quite close to each other. The reason for this is that the projection methodology assumed "constant" Hispanic accession rates from 1980 to the end of the century (see Appendix B for methodology). If there is any change in Army accession policy or any unforeseen, major demographic shift, the actual rates may vary. Of course, the assumption of "constant" rates does not mean that the actual projected numbers of Hispanic accessions are the same for the base year and the projection year. The number of Hispanics in the total U.S. population is projected to increase greatly, and this large increase is reflected in projected Hispanic accession figures even if accession rates stay the same. With more data, it may be possible later to obtain information on the Hispanic proportion of total accessions to the year 2000.

Tables 31 and 32 compare total Spanish origin accessions who are limited in English proficiency for the years 1980 and 2000. Table 31 uses the more conservative TRADOC control adjustment, while Table 32 uses the less conservative alternative adjustment (see Appendix B for details). Several interesting facts are evident in these two tables. First, taken together these results indicate that between one-fourth and one-third of all Hispanic accessions were limited in English skills in 1980 and are projected to be so in the year 2000, unless rates of limited English proficiency change unexpectedly. (The identicality of the 1980 and 2000 proportions must be interpreted with some

caution, as it may be an artifact of the methodology.) Second, the female LEP rate (i.e., the percentage of female Spanish origin accessions who are limited in English proficiency) is about one-fourth the magnitude of the male LEP rate for both years and both types of adjustment. Using the TRADOC adjustment, the female LEP rate is 6.8%, compared with the male LEP rate of 25.0-25.1%. The alternative adjustment yields a female LEP rate of 9.8-9.9%, in contrast to a male LEP rate of 33.2-33.3%. These facts show that about 7 to 10 out of every 100 female Hispanic accessions are limited in English skills, compared with about 25 to 33 out of every 100 male Hispanic accessions. Third, for both years and for both types of adjustment, the number of female Hispanic LEP accessions is less than 100. In contrast, depending on the weighting factor used, the number of male Hispanic accessions varies from about 1,500-2,100 in 1980 to about 1,800-2,600 in the year 2000. This comparison reflects both the low rate of female accessions and the low rate of limited English proficiency among female Hispanic accessions.

The Summary of Results Indicates Hispanic Increases and Sex Differences

The Hispanic population in Army accession ages, 17-35, is projected to grow by 27% to reach a total of over 8,000 by the year 2000, with growth rates differing widely by age. Highest growth is shown by males ages 26-35 (an increase of 62%). This is reflected in the age pattern of Army accession projections.

Hispanic Army accession rates increase from ages 17-18 to 19-20, where the rates peak and then decline. Puerto Rican accession rates are more than twice as high as rates for other Hispanic ethnic groups. Increases are projected for Army accessions in all Hispanic ethnic groups, especially Mexicans ages 17-25 and Puerto Ricans in many age bands. Current and projected accessions are much lower for Hispanic females than for Hispanic males.

Considerable variation by sex, age, and ethnicity occurs in Hispanic LEP (ESL elgibility) rates. Males have far higher LEP rates than females. Puerto Rican LEP rates exceed (in some categories by twice the amount) the LEP rates of other Hispanic ethnic groups. Two different weighting procedures produce different, but still conservative, sets of Hispanic accession LEP projections. The general pattern is one of increase in ESL eligibility or limited English proficiency from 1980 to the year 2000. Use of more liberal weights would show an even more striking increase.

In terms of comparative results, the Hispanic percentage of the total U.S. population ages 17-35 is projected to increase from 7.0% in 1980 to 10.8% in the year 2000, but it still trails behind that of Blacks, who represented 12.3% of the total U.S. population in 1980 and are projected to increase to 15.0% in 2000. These figures do not include many or most illegal Hispanic immigrants, however. Hispanics comprise about 4.8%-5.2% of the total Army accession population in the period 1980-1990. The female LEP rate among Hispanic accessions is about one-fourth the size of the male LEP rate. About

7 to 10 out of every 100 female Hispanic accessions is limited in English proficiency, compared with about 25 to 33 out of every 100 male Hispanic accessions. In both 1980 and 2000, the number of female Hispanic LEP accessions is less than 100. However, the number of male Hispanic LEP accessions ranges from about 1,500-2,100 in 1980 to about 1,800-2,600 in the year 2000, depending on the weighting factors used. Between one-fourth and one-third of all Hispanic accessions were estimated to be limited in English proficiency in 1980 and the same proportion is projected to be similarly limited in the year 2000.

THE ALTERNATIVE CONTROL ADJUSTMENT IS PROBABLY BETTER THAN THE TRADOC CONTROL ADJUSTMENT

The basic question which emerges from the presentation of the two alternative limited English proficiency projections is, which one is the most useful? While both sets are produced through a careful and logical method, each is plagued by at least two types of assumptions which had to be made due to incomplete Army data. The first type of assumption concerns the adjustment of totals to reflect: (1) the known TRADOC total or (2) another total thought to be an improvement over the TRADOC total due to TRADOC's undercount of ESL-eligible persons. The second type of assumption holds LEP and accession rates constant throughout the interval 1980-2000. Again, given the limitations of the data available, these were the only reasonable assumptions which could be applied.

This leads us back to the question of which projections of LEP or ESL eligibility are superior. The answer depends on how accurate one believes the TRADOC data set is in reflecting the actual number of limited English proficient Hispanic soldiers (ESL enrollees and, implicitly, ESL eligibles). We know there is an undercount; the issue is how large the undercount and how to distribute by sex, age, and ethnicity those estimated not to have been counted. Probably, the alternative control adjustment brings us closer to the truth than does the TRADOC control adjustment. Possibly a more liberal adjustment would be even better, although we cannot tell for sure.

The difficulties encountered here with regard to questionable assumptions are in part a product of the data collected and maintained by the Army on accessions, ESL enrollees, and ESL eligibles cross-classified by sex, age, and ethnicity. Ideally, one would like to begin with data which are not undercounted or at least in which the undercount is relatively small. In that situation, no weighting factor would be needed. Also, one should have a good set of historical data to ascertain what changes are occurring, because LEP and accession rates may be changing. Without these high quality data, any projection generated will reflect some degree of error.

We advise that future Army accession projection research could use different sets of assumptions, such as variable accession rates à la Dale and Gilroy (1983) due to different economic conditions. Use of varying assumptions would allow production of multiple sets of projections. The current study was not able to employ such variations due to severe funding and time restrictions.

Also, even if variable assumptions could be used, it must be acknowledged that projections closer to the base year (in this case, 1980) would likely be more accurate than projections further from the base year. This fact would lead us to suggest that the projections be recalculated on a regular basis, say every five to ten years. Erroneous assumptions could be periodically corrected and more accurate projections made.

THE PROJECTIONS HAVE IMPLICATIONS FOR ARMY INSTRUCTIONAL AND MANPOWER PROGRAMS

The results presented above have major implications for the Army. First, due to higher rates of Hispanic limited English proficient accessions, the Army will have an increasing need to provide high quality English-as-a-second-language instruction. Key elements in such instruction are discussed by Oxford-Carpenter, Harman, and Redish (1983). These elements include more emphasis on oral-aural skills inside and outside of the classroom, more concern for adequate teacher training in ESL, realistic appraisal of entry levels and of what can be achieved in the allotted ESL training time, and a job-related approach to ESL instruction.

Second, we have seen that the Hispanic population is young and growing, while the overall U.S. population is older and shrinking. Therefore, Hispanics should be considered as a potential source of able and available manpower for the next two decades and thereafter. Although no recruiting campaign is planned to enlist Hispanics, such a campaign might be useful for long-range manning of the force.

Third, Puerto Rican males will continue to be the main recipients of ESL instruction at least to the year 2000, if current trends continue. Hispanic females in general will require much less ESL instruction than Hispanic males. Perhaps Hispanic females can serve as peer tutors to Hispanic males who are having English language difficulties.

Fourth, manpower and personnel specialists should be aware that the influx of Spanish origin accessions may bring with it a number of linguistic, cultural, and sociological differences. These differences must be understood and considered in the day-to-day Army routine. For example, Hispanics are often found to be extremely patriotic, hardworking, and able to cope well with authority. They often come from very closely knit, religious families. These traits must be acknowledged and can be used to the Army's advantage, particularly for unit cohesion.

Fifth, for recruiting and retention purposes the Army might want to capitalize on the generally high interest in training and education displayed by Hispanics who are limited in English proficiency. The high motivation level of Hispanic ESL-eligible recruits has been documented by Holland, Rosenbaum, Stoddart, and Redish (1982). The increasing number of this type of individual makes it wise to build on that training-related motivation.

Sixth, selection and classification techniques may need to be refined to handle the generally bright, well educated Puerto Ricans who dominate the Army's limited English proficient population. The skills of these recruits need to be appropriately used by the Army in the years to come. The ability and motivation of many Hispanic soldiers should be recognized and used in job selection and classification. For many of these soldiers, the language problem is the main factor which bars them from more prestigious or more technical jobs in the Army. Therefore, the Army must consider how to assess fairly the aptitude of an individual who is deficient in English language skills. A Spanish-language version of the Armed Services Vocational Aptitude Battery (ASVAB) exists but has not been used widely. The currently used English version of the ASVAB may underestimate the aptitudes of some Hispanic applicants. Selection and classification planners need to consider ways to optimize the use of the skills of Hispanic soldiers who have English language problems.

Seventh, a more uniform method for determining who should be assessed for limited English proficiency is desirable for the Army. Decisions about who should take the language screening test, the ECLT, are made in different ways in different locations. Despite regulations, Army operational schedules and immediate manpower needs sometimes cause decisions about who is finally enrolled in ESL training to be made differently, as well. Perhaps all Army accessions should routinely be given the ECLT, which needs only a short administration time. The Navy has experimented with just such a program recently on a pilot basis. A more standardized procedure would assure that all who need such instruction get it and would improve the Army's record-keeping system.

Eighth, future Army accession projection research could use variable assumptions, such as different accession rates across time based on changing economic conditions. A larger investigation would, of course, be necessary, but the yield would be worth the effort.

Finally, better and more complete records would help reduce undercounts and would provide the Army with more reliable data for planning its many programs in the areas of training and manpower. In fact, the Army could use a separate investigation of the number and characteristics of its current Hispanic accession population, as well as trend data over time on that population. Clearly, projections are necessary for long-range planning within the Army. The quality of projections depends largely upon the quality of available data.

REFERENCES

Bouvier, L., Davis, C., & Haupt, R. Projections of the Hispanic Population in the United States 1980-2000. Washington, D.C.: Population Reference Bureau, 1983.

Dale, C., & Gilroy, C. The effects of the business cycle on the size and composition of the U.S. Army. Atlantic Economic Journal, 1983, 11 (1), in press.

Defense News Branch. Fact sheet on "Profile of American Youth." Washington, D. C.: Department of Defense, February 1982.

Deputy Chief of Staff for Operations and Plans. The Army plan (Army guidance, vol. I) 1985-1999. Washington, D.C.: Department of the Army, December 1981.

Directorate of Information, Operations, and Reports. Department of Defense selected manpower statistics, FY81. Washington, D.C.: Department of Defense, 1981.

Dubois, D. D. The Children's English and Services Study: A methodological review. Publication No. 80-503. Washington, D.C.: National Center for Education Statistics, 1980.

Elton, R. M. ODCSPER Form 1, FY85-89 program objective memorandum. Office of the Deputy Chief of Staff for Personnel, Department of the Army, 1983.

Gendell, M., Pol, L., & Oxford-Carpenter, R. Report on the project seeking to produce projections of insular Puerto Rican limited English proficient persons to the year 2000 for U.S. Army English-as-a-second-language training. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1982.

Holland, V. M., Rosenbaum, H., Stoddart, S., & Redish, J. BSEP I ESL programs. Washington, D.C.: American Institutes for Research, 1982.

Krug, R. E., & Wise, L. L. Analysis of BSEP I and II data files. Research Memorandum 82-1. Washington, D.C.: American Institutes for Research, 1982.

Lord, G., & Barnes, D. Personnel assessment 2002. Washington, D.C: Personnel Plans and Systems Directorate, Office, Deputy Chief of Staff for Personnel, Department of the Army, 1983.

Macias, R. F. U.S. Hispanics in 2000 A.D.--projecting the number. Agenda, May-June, 1977, 16-19.

Maier, M. H., & Grafton, F. C. Scaling Armed Services Vocational Aptitude Battery (ASVAB) Form 8AX. Research Report 1301. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1981.

Miller, L. Estimates of the population of the United States, by age, sex, and race: 1980 to 1982. Current Population Reports, Population Estimates and Projections. Series P-25, No. 929. Washington, D.C.: U.S. Bureau of the Census, 1983.

Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics. Profile of American Youth: 1980 Administration of the Armed Services Vocational Aptitude Battery. Washington, D.C.: Department of Defense, 1982.

Office of Equal Opportunity Programs. Information paper: Demographics. Washington, D.C.: Deputy Chief of Staff for Personnel, Department of the Army, December 1981.

O'Malley, J. M. Children's English and Services Study: Language minority children with limited English proficiency in the United States. Rosslyn, VA: National Clearinghouse for Bilingual Education, 1981.

O'Malley, J. M. Children's English and Services Study: Educational needs assessment for language minority children with limited English proficiency. Rosslyn, VA: National Clearinghouse for Bilingual Education, 1982.

Oxford, R., Pol, L., Lopez, D., Stupp, P., Gendell, M., & Peng, S. Projections of non-English language background and limited English proficient persons in the United States to the year 2000: Educational planning in the demographic context. Journal of the National Association for Bilingual Education, 1981, 5 (3), 1-30.

Oxford-Carpenter, R., Harman, J., & Redish, J. English-as-a-second-language programs in the Army. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada, April 1983.

Oxford-Carpenter, R., Pol, L., Lopez, D., Stupp, P., Gendell, M., & Peng, S. Changes in number of non-English language background and limited English proficient persons in the United States to the year 2000: Projections and how they were made. Rosslyn, VA: National Clearinghouse for Bilingual Education, in press.

Peng, S., Oxford, R., Stupp, P., & Pol, L. Estimation of the number of children with limited English proficiency: A review of analytic procedures. Journal of the National Association for Bilingual Education, 1982, 7 (1), 37-52.

Pol, L., Oxford-Carpenter, R., & Gendell, M. Use of self-reported and other-reported language proficiency ratings in making projections of limited English proficient populations. In progress.

Pol, L., Oxford-Carpenter, R., & Peng, S. Limited English proficiency: Analytical techniques and projections. In E. Garcia & R. Padilla, Eds., Advances in bilingual education research. Tempe, Ariz.: University of Arizona Press, in press.

Russell, C. The news about Hispanics. American Demographics, March 1985, 15-25.

Stolz, W., & Bruck, M. Final report: A project to develop a measure of English language proficiency. Arlington, VA: Center for Applied Linguistics, 1976.

Taylor, W. J. et al. (not named). Army manpower issues for the 1990s. Moving from "zero sum" to the prisoner's dilemma." Army 2000 project. Washington, D.C.: Georgetown University Center for Strategic and International Studies. Draft manuscript, not dated.

U.S. Bureau of the Census. Special studies: Language usage in the United States: July 1975 (advance report). Current Population Reports. Series P-23, No. 60, revised. Washington, D.C.: U.S. Department of Commerce, 1975.

U.S. Bureau of the Census. Projections of the population of the United States: 1982 to 2050 (advance report). Current Population Reports, Population Estimates and Projections. Series P-25, No. 922. Washington, D.C.: U.S. Department of Commerce, 1982.

Waggoner, D. Geographic distribution, nativity, and age distribution of language minorities in the United States: Spring 1976. Bulletin 78-5. Washington, D.C.: National Center for Education Statistics, 1978.

Warren, R., & Passel, J. S. Estimates of illegal aliens from Mexico counted in the 1980 United States Census. Paper presented at the annual meeting of the Population Association of America, Pittsburgh, Pennsylvania, April 1983.

APPENDIX A

RELATED RESEARCH COVERS
GENERAL DEMOGRAPHIC STUDIES AND ARMY RESEARCH

This appendix concerns research relevant to the current investigation. Such research falls into two areas: first, general (i.e., non-Army-specific) demographic research on Hispanics or other pertinent ethnic and/or language groups; and second, Army-related research on Hispanics and ESL-eligibles.

General Demographic Research Shows High Hispanic Growth Rates

Many important demographic studies have been conducted on the topic of Hispanics and other ethnic groups. We will discuss the most relevant of these studies here in the order in which they were conducted or published.

The 1970 Census (see Russell, 1983) estimated the Spanish origin population in four ways: a Spanish origin question, asked of a 5% sample of households across the U.S.; a Spanish surname identifier used in five states; a Spanish mother-tongue question asked of a 15% sample of households; and a question concerning birthplace of self and of parents asked of 20% and 15% of households, respectively. With four ways of counting Hispanics, four separate estimates of the Hispanic population were produced by the Census Bureau. The Spanish origin question produced an estimate of 9.1 million (the most often quoted figure for the 1970 Hispanic population). Other 1970 Census estimates of Hispanics were 4.7 million generated from the Spanish surname identifier; 9.6 million based on the Spanish mother-tongue question; and 5.2 million estimated from birthplace data (Russell, 1983). The 1970 Census is likely to contain a severe undercount of Hispanics, an undercount at least as great as the 7.7% underestimate for Blacks, according to the U.S. Commission on Civil Rights (Macias, 1977). A widely held assumption is that undocumented Hispanics avoid government contacts, such as the Census (Macias, 1977).

The 1975 Current Population Survey--Survey of Language Supplement, or CPS-SLS (U.S. Bureau of the Census, 1975) asked questions about current individual language, current household language, mother tongue, ability to speak and understand English, birthplace, year of immigration, and ethnic origin. The CPS-SLS used stratified multi-stage cluster sampling of households. The CPS-SLS was used as a pilot test for certain questions which were used in later studies such as the Survey of Income and Education (SIE). The CPS-SLS indicated that 90% of Americans had no second language, while 4.3 million reported Spanish as a second language and 4.9 million reported English as a second language. Of the 8 million persons 4 years old or over who had a language other than English as their usual language, 5 million (60%) reported difficulty in speaking or understanding English. Four million persons 4 years

old or over had Spanish as their usual language; of this number 54% reported difficulty in speaking or understanding English. Compared to 96% of Americans reporting English as their usual language, 2% of Americans reported Spanish as their usual language. The number of Americans living in non-English speaking households (i.e., households where the language is other than English) was 4.8 million. The 1979 CPS also included a Survey of Language Supplement. Respondents were asked self-report and other-report questions on language proficiency.

In anticipation of the SIE, a study (Stolz & Bruck, 1976) was conducted by the Center for Applied Linguistics to develop a surrogate "measure of English language proficiency," or MELP, which consists of a set of census-type or survey-type questions such as mother tongue, usual language spoken, or family income. The main purpose of a MELP is to allow estimation of limited English proficiency rates when language testing cannot be used, as in the SIE. In order for a MELP to be useful, it must first be calibrated in a study in which both the MELP and a language test are administered, and then the MELP alone can be used as a surrogate for the test in a larger census or survey to impute levels of English proficiency. The MELP study included a sample of children and adults from four states (Florida, Texas, Arizona, and California). This study calibrated the MELP (a set of items including length of time in U.S., ratings of proficiency in speaking and understanding English, usual household language, language spoken with siblings, language spoken with best friends, educational attainment, income, year of birth, and other topics) with a language test covering reception, production, and communication and with other language ratings. A discriminant function analysis showed 82% correct classification between the test and the MELP.

The Survey of Income and Education, or SIE (Waggoner, 1978) was required by the Education Amendments of 1974 to furnish current data on the number of school-aged children in poverty for purposes of formula allocation of ESEA Title I (compensatory education) support. The Census Bureau conducted the SIE with input from the National Center for Education Statistics (NCES). The SIE used stratified, multi-stage cluster sampling, with primary sampling units (PSUs) stratified by proportion of persons 5-17 years of age living in poverty families in 1970. The SIE included 158,500 households and 440,000 individuals in a sample of 51 independent state and District of Columbia samples. The SIE found that approximately 28 million persons in the U S., including about 5 million school-age children, have mother tongues other than English or live in households in which languages other than English are spoken (Waggoner, 1978). Approximately two-thirds of all these persons and more than four-fifths of the school-age children were native born. One person in eight in the U.S. was classified as non-English language background (NELB), and one in ten school-age children (6-18) was NELB. More than one-third of all NELBs and 60% of all NELB school-age children were Hispanic, with Spanish-language background persons numbering 10.6 million. Other principal NELB groups were Italian and German (3 million each); French (2 million); and Asian, including Chinese, Filipino, Japanese, Korean, and Vietnamese (total of 2 million). These figures may be conservative, particularly for the Hispanic population, which includes a sizeable number of undocumented persons.

The Children's English and Services Study or CESS (Dubois, 1980; O'Malley, 1981,1982) was launched by the National Institute of Education (NIE) and NCES to obtain counts of LEP children for the nation and for four smaller areas: California, Texas, New York, and the rest of the nation. The CESS dealt only with the specific language categories of Spanish and "other." The CESS used stratified, multi-stage sampling with 35,000 households screened and approximately 2,000 identified as NELB, and thus eligible for inclusion. Ultimately, 1,909 children (ages 5-14) and their families were interviewed. A 13-item MELP and a specially constructed test of English proficiency (the Language Measurement and Assessment Inventories, or LM&AI) were administered for each sampled child. The LM&AI is an indirect, discrete-point instrument having 11 different forms, one each for ages 5-14. The test is objective-based, built by expert consensus, and covers all four language skills: reading, writing, speaking, and understanding. The results of this test were calibrated with selected MELP items common to both the CESS and the SIE to obtain estimates of LEP persons. Discriminant function analysis in the CESS showed accuracies of classification ranging from 54% to 67% between the MELP and the test. The age group 5-14 was found to contain 2.4 million LEP children. Using extrapolation, the study determined that the U.S. school-age population (4-18 years) contained an estimated 3.6 million LEP children, which equalled 63% of all NELB children in that age range. More Hispanic NELB children ages 5-14 than other NELB children of the same age were classified as LEP. This means that the LEP rate was higher for Hispanic NELB children aged 5-14 (73%) than for other NELB children of the same age. CESS results indicated that LEP rates did not vary appreciably by age. The study showed that 1.5 million or 62% of all LEP children live in three states: California, Texas, and New York. The proportion of LEP children in those states ranged from 70% to 77% while the proportion in the rest of the country was 53%.

The LEP projection study conducted by InterAmerica Research Associates (Oxford, Pol, Lopez, Stupp, Gendell, & Peng, 1981; Peng, Oxford, Stupp, & Pol, 1982; Oxford-Carpenter, Pol, Lopez, Stupp, Gendell, & Peng, in press) made projections by state, age, and language group to the year 2000 for NELB and LEP persons. The SIE, the CESS, the CPS, and the Census Bureau's illustrative projections of the 50 states and the District of Columbia were used as data elements in the study. A special MELP composite developed for this study consisted of two items: reported ability to speak and understand English and family income. A probabilistic procedure was used to link the CESS and the SIE with the new MELP composite. The researchers developed a new Cohort Component Prevalance Rate Method to project the number of LEP persons ages 5 through 14 for particular years. NELB population figures for all ages were projected before LEP rates were applied.

Results indicated that the number of NELBs in the total U.S. was projected to increase from approximately 28.0 million in 1976 (the base year) to 30.0 million in 1980, 34.7 million in 1990, and 39.5 million in 2000. Of all NELBs of any year, the largest single language group was Hispanic, comprising 10.6 million NELBs in 1976, or 38% of the total NELB population in that year. Due to their higher growth rate, Hispanic NELBs were projected to increase to 18.2 million by the year 2000 (46% of the total NELB population). Younger NELB age categories showed projected increases that were larger than

those for older NELB age categories. The Hispanic NELB group was much younger than the rest of the NELBs, and this configuration became more pronounced through the projection years. Heavy concentrations of NELBs were found in Texas, California, and New York, with projected proportional increases in the first two states and a projected proportional decrease in the last. Between 1976 and 2000 there was a projected increase of 880,000 LEP children ages 5 to 14; of this number, 840,000 or 95.5% were accounted for by the Hispanic LEP population. Hispanic LEP children were projected to move from 1.8 million or 71% of all LEP children in 1976 to 2.6 million or 77% in 2000. LEP rates (i.e., the percentage of all non-English language background persons in a particular group who have limited English proficiency) vary considerably by language, with the highest LEP rates (75%) being found among Hispanic and Vietnamese populations and the typical range being 41% to 53%. California and Texas showed overall projected gains in numbers of LEP children between 1976 and 2000, while New York's LEP number remained the same for 1976 and 2000. In various NELB and LEP groups, slight and temporary declines were projected for certain early projection years, but these declines were more than compensated for by later increases.

Peng, Oxford, Stupp, and Pol (1982) reviewed three analytic procedures by which estimates can be made of the number of LEP children in the U.S.: discriminant function analysis as used in the CESS, probabilistic techniques as used in the InterAmerica projection study, and a synthetic estimate procedure. The researchers maintained that the synthetic estimate procedure can be used to generate information about the number of LEP persons with fewer prerequisites than the other two procedures entail. Specifically, the synthetic estimate procedure does not require subjective language ability rating items, unless grouping of subpopulations calls for those items. However, the synthetic estimate procedure still requires reliable, valid, and objective measurement of English language skills from a representative sample of NELB persons. Periodic recalculation of LEP rates was also recommended.

In the 1980 Census (see Russell, 1983), in contrast to the 1970 Census, the question, "Is this person of Spanish/Hispanic origin or descent?" was asked of every person in the country. The Census Bureau admits that there may have been an overcount of Hispanics in certain areas, such as small towns, where Hispanics had rarely been found in the past. However, the overcount in those areas is likely to be too small to have any overall effect, according to experts on the Census as discussed in a recent New York Times article. Using the Spanish/Hispanic origin question, the 1980 Census found that 14.6 million people in the U.S. are Hispanic, a 61% increase over the 9.1 million figure from the 1970 Census. Naturally, the use of a different census-taking procedure regarding Spanish origin makes such direct comparisons between 1970 and 1980 suspect. Census Bureau specialists feel that the true growth rate is probably lower, but "for the nation as a whole they are unable to separate the apparent growth rate of Hispanics due to improved reporting on the census from the true growth due to births and to legal and illegal immigration" (Russell, 1983, p.16). However, for certain states with many Hispanics, comparisons between 1970 and 1980 are possible because large numbers reduced sampling errors. Russell indicated that the Hispanic population of Florida grew 112%

in the ten-year period (even before the influx of about 120,000 Cubans just after completion of the 1980 Census), while California's Hispanic population increased by 92%, Texas' by 62%, and New York's by 23%. The 1980 Census counted 8.7 million Mexicans, 2.0 million Puerto Ricans, 803,000 Cubans, and 3.1 million "other Spanish." Mexicans were the dominant Hispanic group in California and Texas. Puerto Ricans were the largest Hispanic group in New York, and Cubans were the biggest Hispanic group in Florida. According to the 1980 Census, the median age of Hispanics throughout the U.S. is 23 years, compared to 30 years for all Americans (Russell, 1983). In the 1980 Census, median family income for all Hispanics was $14,700, compared to $19,900 for all U.S. families and $12,600 for Black families; but wide ranges were found for various Hispanic groups, with Cubans being most affluent.

Although the overall income of U.S. Hispanics is lower than the national average, Hispanics in the U.S. are the wealthiest Hispanics in the world (Russell, 1983). The potential for economic opportunity draws both legal and illegal Hispanic immigrants to the U.S. Incomes of Hispanics in this country are lower than the national average largely due to lower Hispanic education levels, although Russell indicated that younger Hispanics are catching up with their non-Hispanic peers in the area of education. Among 25- to 34-year-old Hispanics, 57% had finished high school in 1981, and 24% had attended at least one year of college, according to the 1981 Current Population Survey (Russell, 1983).

Use of English varies by Hispanic ethnic group. Russell (1983) pointed out that the 1980 survey of Hispanics in NCES' High School and Beyond Study found that among high school seniors, 12% of Mexican-Americans, 19% of Puerto Ricans, and 26% of Cubans spoke only Spanish at home. In contrast, 30% of Mexican-Americans, 27% of Puerto Ricans, and 21% of Cubans spoke only English at home. The rest used both languages at home. Level of education and place of birth (inside or outside U.S.) are related to English proficiency among Hispanics.

Census Bureau demographers Warren and Passel (1983) noted that the official 1980 Census count of illegal aliens in the U.S. was only about 2 million, which is about one-third of the more scientifically accurate 6 million estimate produced by Warren and Passel. (Note that this would mean that the actual total number of Hispanic origin individuals in the U.S. in 1980 might be closer to 18.6 million than to the reported 14.6 million). Estimates of the numbers of illegal aliens in the U.S. have varied widely, from 2 million to 25 million. No single country besides Mexico appears to contribute a substantial segment of the illegal alien population, according to Warren and Passel. Macias (1977) estimated that at least 90% of the undocumented population is Hispanic.

A higher growth rate for Hispanics than for the overall U.S. population was cited by Macias (1977), Oxford, Pol, Lopez, Stupp, Gendell, and Peng (1981), and Russell (1983). Some contributing factors include the larger Hispanic family, the younger age of Hispanics, the higher birth rate of U.S. Hispanics (except for Cubans) in comparison with the general population, and continuous legal and illegal immigration to the U.S. from Spanish-speaking countries.

Because of this high Hispanic growth rate, it was asserted that by the year 2000 Hispanics will be the largest racial/ethnic group, after Anglos, in the U.S. (Macias, 1977). The proportion of the total U.S. population that is Black has been projected to increase from 11.9% in 1981 to 13.4% in 2000 (U.S. Bureau of the Census, 1982). Not all data support the assertion that Hispanics will outstrip Blacks in number by the year 2000. The key question relates to the uncertain number of illegal Hispanic immigrants.

A report published by the Center for Continuing Study of the California Economy (cited by Russell, 1983) projected that the U.S. Hispanic population will number 18.8 million by 1990 and 23.1 million by 2000 using one set of assumptions, or 20.4 million by 1990 and 26.9 million by 2000 using a different set of assumptions. The higher figures assume higher fertility and more legal and illegal immigration than the lower figures. In both projection series, Mexicans were projected to increase as a share of the total Hispanic population, from 61% in 1990 to as much as 66% in 2000 under the higher-growth alternative. As a proportion of the total population, Hispanics were projected to increase from their current 6.4% to between 8.6% (first alternative) and 9.9% (second alternative) by the year 2000. By age the youngest group, under 15, was projected to grow most slowly because Hispanic fertility is expected to decline in accordance with declines already seen in the rest of the U.S. population.

As cited by Russell (1983), median age of Hispanics was projected to climb to between 27 and 29 years by the turn of the century--still far below the projected median age of 36 for all Americans. The total U.S. population is growing older. The most rapidly growing age group in the U.S. population is 35- to 44-year-olds (Miller, 1983). The U.S. population of 18- and 19-year-olds, the prime group entering the labor force, college, and the Armed Forces, has been projected to decline from 8.5 million in 1981 to 6.5 million in 1995 before rising slowly to 7.5 million in 2000, according to the U.S. Bureau of the Census (1982). These changes represent a decline of 24% between 1981 and 1995 and a net decline of 12% between 1991 and 2000. Hispanic age structures are very different from and younger than age structures of the total U.S. population. Within the total U.S. population there is projected to be an increase in the percentage of students expected to complete high school, but both the relative number of 18- to 24-year-olds as a percentage of the total population and the absolute number of high school graduates each year are projected to decline over the next two decades (Taylor et al., n.d.). These factors will shrink the eligible manpower pool for military service.

Macias (1977) presented Hispanic projections for the year 2000 that ranged from a conservative 17.5 million to a liberal 55.3 million, depending on the rate of natural increase, source of base year data, and inclusion or exclusion of illegal alien data. Based on these figures, Hispanics in 2000 were projected to represent from 6.7% to 21% of the total U.S. population. At the low end, Hispanics in 2000 would be half the total of the Black population and at the high end about twice the Black total.

The Population Reference Bureau projections of Hispanics to the year 2000 (Bouvier, Davis, & Haupt, 1983) provide data in the appropriate ethnic, age, and sex detail needed for the current research. We feel they are the best available projections having the necessary characteristics. The methodology and results sections report our use of those projections.

The Summary of General Demographic Research Focuses on Increased Hispanic Growth

In sum, many investigations have been conducted concerning Hispanic population growth. Results across studies show that Hispanics as a group are increasing faster than other ethnic or language groups in the U.S., although the assertion that Hispanics will overtake Blacks as the largest U.S. minority group by the year 2000 is still under debate. Hispanics are younger than the total U.S. population, which is growing older. The increasing age of the U.S. population is causing a shrinkage in the eligible military pool. Hispanics may slightly alleviate that shrinkage because of their different age structure.

Army-Related Research Shows Sizeable Number of Limited English Proficient Hispanic Accessions

The Army's great concern for projections of Spanish origin ESL eligibles is related to the fact that almost all (85-95%) of the ESL eligibles are native Spanish speakers (Holland, Rosenbaum, Stoddart, & Redish, 1982; Oxford-Carpenter, Harman, & Redish, 1983). Most of the Spanish-speaking, ESL-eligible soldiers are from Puerto Rico. Most non-Spanish-speaking ESL eligibles are from Korea and the Philippines. Puerto Rican ESL eligibles are almost all high school graduates who are literate in their native language. Some have college experience and even college degrees. Most have studied English in a grammar-translation mode in Puerto Rico. The typical ESL soldier has some facility in reading and writing English but weak skills in speaking English and understanding spoken English. Despite their previous English language training, Army ESL students' scores on the ESL screening test, the ECLT, are widely distributed over the ESL-eligible range of 0 to 69.

During fiscal years 1979 through 1981 (FY79-81), at least 4,483 limited English proficient soldiers were identified as eligible for ESL instruction, with eligibiltiy based on below-70 ECLT scores and/or referral by commanders (Krug & Wise, 1982; Holland, Rosenbaum, Stoddart, & Redish, 1982; Oxford-Carpenter, Harman, & Redish, 1983). ESL instruction is optional for members of the National Guard and the Enlisted Reserves but is officially required for eligible Regular Army enlistees. Despite the officially mandatory nature of ESL for Regular Army soldiers who lack English skills, only about 62.5% of the eligibles actually enrolled in FY79-81. The figure of 4,483 is an underestimate, because the data base from which it comes (provided by the U.S. Army Training and Doctrine Command, or TRADOC) is known to have a considerable amount of missing data. Extrapolating from data gathered in a special survey of Army ESL classes in FY82, it is estimated that the ESL enrollment for that fiscal year alone was 1,500 to 2,000 soldiers--most of whom were, of course, of Spanish origin.

The Department of Defense study, Profile of American Youth (Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics, 1982), found that larger percentages of Hispanic and Black Army accessions had high school diplomas than did White accessions (87% of Hispanics, 92% of Blacks, and 83% of Whites). In the same study Hispanics had higher Armed Forces Qualifying Test (AFQT) averages than Blacks but lower ones than Whites, and the same pattern occurred for reading grade levels. Profile of American Youth figures for Hispanics of accession ages are about 80% the size of Census-based figures, according to Frances Grafton of ARI (personal communication, 2 September 1983).

Based on a Hispanic Market Profile produced by Strategy Research Corporation, the Office of Equal Opportunity (EEO) Programs of the Department of the Army (1981) developed some preliminary projections of Hispanic accessions to 1990. The market profile figures led the Department of the Army to assume that the Army's Hispanic accessions increased from 24,609 to 30,582 (24.3% increase) between 1976 and 1980 and that these accessions would grow from 30,582 to 76,284 by 1990 (40.1% increase). The 1990 Hispanic figure represents 9.9% of the 1990 total force, according to the Army's information paper on the topic. However, the time intervals used in the market profile and the Army projections were not completely parallel, and assumptions underlying the projections were not explained. These projections are about five to six times larger than those produced in the current investigation, although no adequate explanation for the difference can be determined.

Gendell, Pol, and Oxford-Carpenter (1982), the current authors, attempted to make demographic projections of limited English proficient insular Puerto Rican accessions in the Army to the year 2000 using ECLT scores as a basis for determining LEP rates. However, a major problem arose because the ECLT is administered to relatively few accessions, and inconsistent criteria are used for determining who takes the ECLT. Some soldiers who need ESL instruction may be missed in the process. Due to this problem and others, it was impossible to make demographic projections using an actual language test as a basis for Army LEP rates. Gendell, Pol, and Oxford-Carpenter mentioned the option of administering the ECLT to all recruits in order to assess English competence and to provide appropriate data for planning.

In the absence of administration of the ECLT to all recruits, in 1983 the current authors turned to other methodological alternatives, such as use of language proficiency ratings available in the 1979 Current Population Survey. These ratings proved too subjective, as Stolz and Bruck (1976) might have foretold, and resulted in severe undercounts when linked with Army accession data (Pol, Oxford-Carpenter, & Gendell, in progress). The subjective procedures, while logically appealing, were abandoned in favor of the simple approach of estimating LEP rates by using recent ESL enrollment and employing an inflation factor to correct for undercounts. This approach will be described in detail in Appendix B.

Although their research does not directly mention Hispanics, Dale and Gilroy (1983) produced econometric forecasts of Army enlistment that may have implications for Hispanics. Dale and Gilroy found that the rise in unemployment rate has led to a substantial increase in Army enlistments of

male nonprior-service high school graduates. They projected that a drop in the national unemployment rate of just 1% (from 9% to 8%) could cause Army enlistments of male nonprior-service high school graduates to fall by 8.8%. A military wage freeze could also cause enlistment rates to fall substantially. Educational benefit levels also affect enlistment levels, as do Army Recruiting Command efforts to attract high school graduate enlistees. These factors may influence Hispanic recruitment. We may speculate that many Hispanics, perhaps in larger proportions than Anglos, may be drawn to the Army particularly in times of high unemployment. Hispanics may be more willing than some other groups to accept military salaries. Because Hispanics are closing the education gap between themselves and non-Hispanics, many may seek Army educational benefits in larger proportions than non-Hispanics. Change in unemployment rate, education benefits, and salary might therefore differentially affect Hispanics and non-Hispanics in terms of enlistment rates. In a similar vein, the report mentioned earlier, Profile of American Youth (Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics, 1982, pp. 16-19), noted the strong effects of a variety of factors (accession policy, military pay, economic conditions, and All-Volunteer Force) on AFQT scores of accessions.

Minorities and women are increasing their numbers in the Army. Taylor et al. (n.d., pp. 19-20) emphasized that the result of these trends is that "a disproportionate number of minorities--and certainly many women--are likely to become casualties in any future conflict. . ." They conjectured that Army combat effectiveness "may be significantly influenced by the racial content or the number of women in the force."

Lord and Barnes (1983) reported that the numbers of Blacks in military service is higher than the numbers of other minority group members in military service. In 1982, 33% of the enlisted force and 7.8% of the officer corps were listed as Black; 23% of all recruits in 1982 were Black, and other minorities (including Hispanics) represented only about 5% of recruits. The higher percentage of Blacks in the overall Army (recruits and reenlistees) is explainable because Blacks tend to stay in the service longer than whites due to economic conditions, according to Lord and Barnes. These researchers predicted that, due to higher birth rates among Hispanics than among other minority groups, Hispanics would outnumber Blacks by the end of the century, resulting in higher levels of Hispanic than Black accessions by the year 2000. As mentioned earlier in this review of research, the data may not justify the conclusion reached by Lord and Barnes about Hispanic dominance among minority-group Army accessions by the year 2000, particularly because illegal immigrants are technically ineligible for Army service.

The Summary of Army-Related Research on Hispanics and ESL Eligibles Emphasizes Puerto Ricans

Research on Hispanics and ESL eligibles in the Army indicates that there is a sizeable number of limited English proficient soldiers in the Army and that most of them are well-educated Puerto Ricans. Larger percentages of Hispanics and Black Army accessions than White Army accessions have graduated from high school. Accession is influenced by national economic trends, which might differentially affect Hispanics and other groups. Although Blacks are the largest minority group in the Army, the high Hispanic growth rate is likely to alter the numbers of Hispanics and Blacks in the total military manpower pool.

APPENDIX B

THE PROJECTION METHOD HAS THREE KEY PARTS

As stated earlier, the objective of this project is to make projections of Hispanic Army accessions who have limited proficiency in English. The projections are carried out in five-year intervals to the year 2000 and shown in suitable detail.

The Projection Formula Combines Three Broad Data Sets

The procedure for preparing the projections combines three general sets of data:

(1) a projection of the Spanish origin population in the U.S. in Army-eligible ages (17 through 35),

(2) rates of U.S. Army accesssion for Spanish origin persons, and

(3) rates of limited English proficiency for Spanish origin accessions.

The projections are made separately for males and females in the following age intervals: 17-18, 19-20, 21-25 (disaggregated to 21-22 and 23-25 for males), and 26-35, which are the age limits for U.S. Army accession. In addition, the projections are made for the following ethnic groups: total Spanish origin, Mexican origin, Puerto Rican origin, and all others of Spanish origin.

Combining the three data sets above, a projection is derived by the formula:

$$\underset{i,j,k}{\text{(a) projection}} = \underset{i,j,k}{\text{(b) population projection}} \times \underset{i,j,k}{\text{(c) accession rate}} \times \underset{i,j,k}{\text{(d) limited English proficiency (LEP) rate}}$$

where: i = sex,
j = age,
k = ethnic group.

In other words, a projection (a) for any sex, age, and/or ethnic-group-specific population is derived by taking that population's projection of size (b) and multiplying it by its accession rate (c) and its LEP rate (d). For example, in order to project the number of 17- to 18-year-old male Puerto Rican accessions who in 1990 are LEP, we take the 1990 population projection of 17- to 18-year-old male Puerto Ricans and multiply it by the appropriate accession and LEP rates. Projections of the Spanish origin accessions are made by multiplying the Spanish origin population projections (b) times relevant accession rates (c).

The Hispanic Population Projection Methodology Uses Data from the Population Reference Bureau and the Immigration and Naturalization Service

The Spanish origin population projection data by five-year age groups, sex, and ethnic background (i.e., Mexican, Puerto Rican, other Spanish) for five-year age intervals from 1980 to 2000 has been prepared by the Population Reference Bureau (Bouvier, Davis, & Haupt, 1983). Three types of assumptions (fertility, mortality, and migration) need to be considered in regard to these Spanish origin population projections.

Since the youngest age of interest to the Army is 17, and the base date for the projections is 1980, the only births that can influence the projection to the year 2000 are those that occur in the brief period 1980-1983. It makes little difference, therefore, what is assumed about fertility.

As for mortality, the single assumption of a gradual but decelerating decrease in the death rates from their already-low initial levels seems reasonable. Moreover, since the death rates in the ages of interest to this study (17-35) are very low, even unreasonable assumptions about mortality would have only negligible effects on the numbers projected.

Migration, however, is another story. There are several reasons for this. One, during the past two decades there has been considerable legal immigration from Latin America. Two, there has been a considerable and perhaps growing volume of illegal immigration, particularly from Mexico (Warren & Passel, 1983). Three, the volume of legal and, to some extent, illegal immigration is influenced by political decisions about immigration legislation and the willingness to accept exiles, refugees, and those seeking asylum.

Annual data supplied by the Immigration and Naturalization Service for the late 1970s provided a basis for constructing a single assumption about the annual level of legal immigration for each of the Hispanic national origin groups specified above, specifically, about 220,000 legal immigrants a year with an allowance of an additional 24,000 Cubans in the 1980-1985 period, reflecting the Mariel exodus. A planned, additional assumption involving illegal Hispanic immigrants at a level of 400,000 per year was considered but dropped for two reasons: (1) illegal immigrants are not eligible for service in the Army, and (2) contractual time schedules did not allow this assumption to be used.

In addition, the Spanish origin five-year interval population projections are disaggregated into single years in order to create the age bands specified above. The fluctuation over time in single-year cohort size in the total Spanish origin population parallels the fluctuation during the last 30 to 35 years in the number of births in the U.S. This implies that to disaggregate the 1980-2000 five-year age groups into single years of age, it is better to use the age distribution reported in the 1980 Census than a mathematical method (i.e., some type of interpolation). This observation also seems to imply that the effect of net migration on the Spanish origin population has not been great enough to alter the age pattern produced by the fluctuating numbers of births. There is, however, no direct evidence of the latter for the Spanish origin population. Data on births to Spanish origin women first began to be reported in 1978 and then only for 17 states.

It is harder to judge the reasonableness of this procedure for the national origin aggregates which are included in the total Spanish origin population (Mexican, Puerto Rican, and other). However, it is preferable to use the same procedure for the component groups as for the aggregate.

The Hispanic Accession Projection Methodology Includes Army Accession Data and Census Bureau Projections

The following procedure is used for calculating Army accession rates. Accession data provided by the U.S. Army by sex, age, and ethnic group circa 1980 are the numerators for the rates, while the appropriate 1980 Census population figures by sex, age, and ethnic group serve as the denominators.

We did not make projections of total Army accessions, only Spanish origin Army accessions. As noted earlier, the Spanish origin population projections are multiplied by the accession rates to obtain Spanish origin accession projections. Changes in proportions of Hispanic to other ethnic groups across time are built into the Spanish origin projections before they are multiplied by accession rates. For example, if the proportions of Hispanics and Blacks in the total U.S. population change across time, this will be automatically reflected in Army accession projections and in any other projections based on U.S. population figures.

Accession data are obtained from the Army's FY81 accession file, which covers the period from October 1980 through September 1981. This period roughly represents the year 1980, which is used as the base year for all projections in the current investigation. FY81 was selected for use because in previous years there was a problem with inaccurate norming of the screening test for applicants, the Armed Services Vocational Aptitude Battery (ASVAB). An error in calibration of the ASVAB in use from January 1976 through September 1980 resulted in inaccurate category designations for some recruits taking the test (Maier & Grafton, 1981; Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics, 1982). Specifically, the January 1976 version of the Armed Forces Qualifying Test (AFQT), which is composed of four key subtests of the ASVAB, had been miscalibrated to earlier forms of the test. This error inflated the AFQT scores of low-scoring recruits. The problem was corrected with the introduction of the new test in

October 1980. When the inflated scores were recomputed, the corrected norms revealed a significant decrease in Category III (average-scoring recruits) and a very large increase in Category IV (below-average) recruits recorded as having entered the services during the period 1976 through mid-1980. Even with the existence of retroactively corrected norms for earlier years, many problems remain for those years in terms of estimating the number of Hispanic accessions who would have been admitted under the new norms, had those norms been in place at the time. Also, use of the corrected norms would entail a separate investigation. Therefore, it was decided that FY81 was the most appropriate and accurate source of Hispanic accession data for the projection base year, 1980. Even without the norming problem, FY81 (October 1980 through September 1981) would have been as practical a source of base year accession data as FY80 (October 1979 through September 1980). Had the norming problem not existed, however, it would have been possible to tabulate monthly data to obtain annual accession figures for the calendar year 1980, which would have been somewhat more precise.

Due to the lack of useful historical data, we have no basis for projecting variable accession rates for five-year intervals from 1980 to 2000. Therefore, our projections assume "constant" accession rates. Use of varying accession rates would demand a whole different investigation at greater cost to the Army than the current investigation. We recommend that such research be conducted.

Even "constant" rates are ambiguous. "Constancy" may mean that the rates observed at each age are peculiar to that age rather than to the cohort. In the former case, constant rates would mean that the rates for those, say, 17 to 18 years old would be the same at every projection date. This is the assumption for the projections appearing in this report. Constant cohort rates, on the other hand, would mean that the rates for those 17-18 in 1980 would be the same as those for 22-23 in 1985, 27-28 in 1990, 32-33 in 1995, and 37-38 in 2000. Since accession is a one-time event, and the probability of such an event occurring appears to be negatively related to age, age-specific rather than cohort-specific rates are appropriate for measuring accession.

A check was made in June 1983 with Accession Policy personnel in the Department of the Army concerning any current or future accession policies regarding Hispanics. These administrators stated that there is no specific policy existing or planned which either limits or promotes Hispanic accession. This means that there are no negative or positive quotas regarding Hispanics. Therefore, we did not have to build in an adjustment factor (ceiling or floor) for Hispanic accessions.

Since the accession data, unlike U.S. population data, include insular Puerto Ricans, the calculation of accession rates for the Puerto Ricans and the total Spanish origin population requires the inclusion of the insular Puerto Rican population in the denominator. This has been done for 1980. Note that there were considerably more insular Puerto Ricans than continental Puerto Ricans among Army accessions.

However, no up-to-date (i.e., based on the 1980 Census) projection of the insular Puerto Rican population is available. Projection of that population was outside the scope of the current research. So, the disaggregation of the five-year age groups and the calculation of the projected number of accessions was done using the continental data only. Disaggregation of five-year data was done using a standard formula as explained in Oxford, Pol, Lopez, Stupp, Gendell, and Peng (1981). Thus, if we were able to include the insular Puerto Rican population, the projections would have been larger. However, because we were not able to include the insular Puerto Ricans, the denominators of the accession rates are smaller and therefore the accession rates are larger. Nevertheless, the relationship between insular Puerto Ricans and the total Spanish origin population remains intact. As a result, the projected number of accessions should be correct.

As for the disaggregation, the percentage distribution within each five-year age category has been calculated for both the continental population alone (Puerto Rican and Spanish origin) and for the continental plus the insular Puerto Rican population and found to vary only slightly. Hence, calculation based on the continental population, which is simpler, provides reliable results.

The Hispanic LEP or ESL Eligibility Projection Methodology Uses TRADOC and EMF Data

To calculate ESL or LEP eligibility rates, we relied on Army data for the number of limited English proficient soldiers (by sex, age, and ethnic group) for the numerator and on Army accession data (again by sex, age, and ethnic group) for the denominator. We have ESL data for three years (FY79-81) and accession data circa 1980. ESL data came from TRADOC's BSEP I ESL data file.

However, problems exist in the LEP data set. In FY79-81, at least 4,483 limited-English speaking soldiers were identified as limited in English proficiency and hence eligible for ESL instruction, as noted earlier. In FY79-81, approximately 62.5% of ESL-eligible soldiers, at least 2,800 soldiers, enrolled in BSEP I ESL classes. Because data are known to be missing from the TRADOC data base, these figures are almost certainly underestimates. In FY82, a special survey was conducted by the American Institutes for Research (AIR) with 550 soldiers answering questionnaires during a three-month period. Extrapolating from the AIR survey data, it has been estimated that FY82's enrollment was 1,500--2,000 soldiers. Therefore, a method is needed to adjust the LEP data provided by the U.S. Army to levels which better reflect the actual number of ESL-eligible or LEP accessions. Because of difficulties in adjusting these figures, we offer two sets of projections, both relatively conservative with one less conservative than the other. These are the best available figures. Better data could be obtained through a full-scale demographic survey of limited English speaking accessions, and the Army might be wise to fund such an investigation. However, at the current time only estimates can be made using two available weighting factors.

The first, more conservative set of projections uses data from the Enlisted Master File (EMF) linked with TRADOC's BSEP I ESL enrollment data for FY79-81. This matching is done in order to obtain sex, age, and ethnic breakdowns (available on the EMF) for ESL enrollees (listed on the TRADOC tape). The EMF data provided by the U.S. Army are for a 50% sample of all soldiers with Social Security numbers ending in digits 5 through 9. In addition, the computerized match between EMF data and BSEP I ESL enrollees for FY79-81 is successful in only 60% of the cases due to poor or incomplete data or to attrition. However, attrition accounts for only a fraction of the unmatched data. In other words, the original matched data on ESL enrollees provided by the U.S. Army represents only 30% (i.e., 50% multiplied by 60%) of what should be the total figure. Therefore, it seems logical to adjust the total figure by a factor of 1/.30 or 3.33. Nevertheless, when the total of the TRADOC-EMF match (1,160, which is the number provided by the U.S. Army) is adjusted by this factor, the new total (1,160 x 3.33 = 3,863) is less than the total of ESL-eligibles from the TRADOC data set (4,483). Also, the TRADOC data set is believed to contain an undercount. Therefore, we weight our figure once more (4,483/3,863 = 1.16) to achieve the control total 4,483, though we know that this is a conservative estimate of ESL-eligibles because of the TRADOC undercount. Application of these two weights (3.33 and 1.16) provides us with our first set of projections. Finally, these figures comprise a three-year total, and to derive a one-year projection this number must be divided by 3. By this process, the more conservative ESL eligibility rates and projections are obtained.

The slightly less conservative method is as follows. As stated earlier, it has been estimated that FY82's BSEP ESL class enrollment was 1,500--2,000 soldiers (based on special survey data). If we assume the number of enrollees was relatively constant circa 1980, then by using the lower figure of 1,500 we can estimate that there were 4,500 (3 x 1,500) enrollees in FY79-81. Since enrollees are 62.5% of the ESL-eligibles, then an adjustment factor of 1.6 (1 x .625) must be applied. Therefore, an alternative projection is produced using 7,200 (1.6 x 4,500) eligibles as a control total. The weighting factor to accomplish this is 7,200/3,863 = 1.8638. Again, this is a three-year total, so for one year the number must be divided by 3. This is still a fairly conservative method. A more liberal method might have used the larger figure of 2,000 instead of 1,500 enrollees per year.

The final issue remaining focuses on how to distribute within sex, age, and ethnic group the adjusted ESL-eligible totals. Because we have no additional information on how to distribute these persons, they are distributed in proportion to the percentage they already represent. That is, for example, if male Puerto Ricans ages 17-18 comprise 5% of the unadjusted ESL-eligible figure, then they make up 5% of the adjusted total. There may be problems with this, because some groups (e.g., females) may have slightly greater attrition and should therefore perhaps represent a slightly greater proportion of the adjusted than the adjusted totals. However, in the absence of solid facts to help us determine differential weights after a thorough review of all available data, we choose to apply the simpler proportional distribution scheme, in which a single group has the same proportional distribution for unadjusted and adjusted figures.

It should be emphasized that this methodology for projecting Hispanic ESL eligibles includes a large number of implicit assumptions, particularly when weighting factors are involved. All available Army, Census Bureau, and other data were carefully studied and were used whenever relevant. The Army needs a separate, thorough demographic survey concerning the number and characteristics of its current Hispanic accession population. Trend data over time would also help. Such information would allow our assumptions to be checked. Until such information is available, our assumptions stand as the most logical and feasible basis for projections of limited English proficient Hispanic accessions for the next two decades.

The Methodology for Comparisons Involves Disparate Sources

The first comparison is between the total U.S. population ages 17-35 and the Hispanic population of the same ages in the years 1980 and 2000. These figures are calculated from data provided by the Census Bureau (Miller, 1983; U.S. Bureau of the Census, 1982) and the Population Research Bureau (Bouvier, Davis, & Haupt, 1983) respectively. These data do not include insular Puerto Ricans, because no adequate projections yet exist for insular Puerto Ricans.

The second contrast is between Blacks and the total U.S. population ages 17-35 for 1980 and 2000. This comparison uses calculations based on Census Bureau data (Miller, 1983; U.S. Bureau of the Census, 1982).

A comparison of total Army accessions with Hispanic Army accessions is found next. The Army has no accession projections to the year 2000, although the Army's "objective" (a statement of a desired goal) for personnel strength to the year 2000 may be ready by October 1983 for inclusion in the Army Plan, according to informal statements made by the Army's Directorate for Personnel Plans and Systems. At this time, the furthest available "objective" (which is not the same as a statistical projection) is contained in a memorandum by Elton (1983) for the year FY89. We are accepting Elton's FY89 "objective" in the current investigation as a rough equivalent to a 1990 projection. Our Hispanic accession projections are made by multiplying Hispanic population projections by accession rates.

The last set of comparisons is between Hispanic LEP accessions in the years 1980 and 2000 using the two different weighting factors--first the adjustment associated with the TRADOC control total and then the adjustment related to the alternative control total. The two adjustments produce distinctly different results.

All these comparisons involve multiple and disparate data sources, which use different assumptions and methods. For example, Elton's memorandum is oriented toward an Army "objective" for FY89, whereas Census Bureau data are concerned with statistical estimates and projections. Therefore, one has to be careful in making such comparisons to specify the methodology and sources as clearly as possible. The comparisons offer very relevant and important policy data but should be interpreted cautiously. When and if the Army begins to make actual demographic projections of accessions, comparisons such as those mentioned above can be made with greater confidence.

APPENDIX C

Table		Page
1.	Total Spanish origin population projections by sex and age	C-3
2.	Puerto Rican population projections by sex and age	C-4
3.	Mexican population projections by sex and age	C-5
4.	Other Spanish origin population projections by sex and age	C-6
5.	Total Spanish origin accession rates by age and sex, 1980	C-7
6.	Male Army accession rates by age and ethnicity, 1980	C-8
7.	Female Army accession rates by age and ethnicity, 1980	C-9
8.	Total Spanish origin Army accession projections by sex and age	C-10
9.	Puerto Rican origin Army accession projections by sex and age	C-11
10.	Mexican origin Army accession projections by sex and age	C-12
11.	Other Spanish origin Army accession projections by sex and age	C-13
12.	Male ESL-eligible (LEP) rates by age and ethnicity	C-14
13.	Female ESL-eligible (LEP) rates by age and ethnicity	C-14
14.	Total Spanish origin male ESL-eligible (LEP) projections by age (adjusted to TRADOC control total)	C-15
15.	Total Spanish origin female ESL-eligible (LEP) projections by age (adjusted to TRADOC control total)	C-15
16.	Puerto Rican male ESL-eligible (LEP) projections by age (adjusted to TRADOC control total)	C-16
17.	Puerto Rican female ESL-eligible (LEP) projections by age (adjusted to TRADOC control total)	C-16
18.	Mexican male ESL-eligible (LEP) projections by age (adjusted to TRADOC control total)	C-17
19.	Other Spanish male ESL-eligible (LEP) projections by age (adjusted to TRADOC control total)	C-18
20.	Other Spanish female ESL-eligible (LEP) projections by age (adjusted to TRADOC control total)	C-18
21.	Total Spanish origin male ESL-eligible (LEP) projections by age (adjusted to alternative control total)	C-19
22.	Total Spanish origin female ESL-eligible (LEP) projections by age (adjusted to alternative control total)	C-19
23.	Puerto Rican male ESL-eligible (LEP) projections by age (adjusted to alternative control total)	C-20
24.	Puerto Rican female ESL-eligible (LEP) projections by age (adjusted to alternative control total)	C-20
25.	Mexican male ESL-eligible (LEP) projections by age (adjusted to alternative control total)	C-21
26.	Other Spanish male ESL-eligible (LEP) projections by age (adjusted to alternative control total)	C-22
27.	Other Spanish female ESL-eligible (LEP) projections by age (adjusted to alternative control total)	C-22

Table		Page
28.	Comparison of total U.S. population and Spanish origin population (ages 17-35) in 1980 and 2000	C-23
29.	Comparison of total U.S. population and black population (ages 17-35) in 1980 and 2000	C-24
30.	Comparison of total Army accessions and Spanish origin Army accessions circa 1980 and circa 1990	C-25
31.	Comparison of total Spanish origin accessions and LEP Spanish origin accessions in 1980 and 2000 (adjusted to TRADOC control total)	C-26
32.	Comparison of total Spanish origin accessions and LEP Spanish origin accessions in 1980 and 2000 (adjusted to alternative control total)	C-26

Table 1

Total Spanish Origin Population Projections by Sex and Age

Age	Year				
	1980	1985	1990	1995	2000
Males					
17-18	334,035	306,491	337,263	370,917	413,430
19-20	344,632	328,728	354,160	364,960	423,747
21-22	328,907	353,751	329,010	356,414	394,920
23-25	472,487	552,874	516,441	556,674	584,089
26-35	1,194,740	1,614,060	1,902,030	1,932,130	1,937,310
Females					
17-18	310,174	300,677	325,901	359,202	398,245
19-20	319,761	320,103	345,444	354,907	411,764
21-25	754,599	848,309	831,844	892,595	952,332
26-35	1,198,430	1,538,920	1,791,440	1,864,100	1,907,245
Totals					
Male	2,664,081	3,155,904	3,438,904	3,581,095	3,753,496
Female	2,582,964	3,008,009	3,294,629	3,470,804	3,669,586
All	5,247,765	6,163,913	6,733,533	7,051,899	7,423,082

Note: Continental Puerto Ricans only.

Table 2

Puerto Rican Population Projections by Sex and Age

Age	Year				
	1980	1985	1990	1995	2000
Males					
17-18	45,094	43,162	40,832	45,994	42,063
19-20	45,711	47,418	47,743	44,746	47,586
21-22	42,239	49,286	46,645	43,535	50,265
23-25	60,143	75,208	75,855	75,447	74,332
26-35	158,916	206,774	259,885	279,029	275,181
Females					
17-18	44,232	41,919	39,530	44,057	40,516
19-20	45,078	45,115	45,322	42,111	44,874
21-25	107,514	117,118	113,379	109,252	113,522
26-35	177,535	215,024	247,400	253,224	245,573
Totals					
Male	352,103	421,848	470,960	488,751	489,427
Female	374,359	419,176	445,631	448,644	444,485
All	726,462	841,024	916,591	937,395	933,912

Note: Continental Puerto Ricans only.

Table 3

Mexican Population Projections by Sex and Age

Age	Year				
	1980	1985	1990	1995	2000
Males					
17-18	207,461	185,648	213,111	234,280	270,862
19-20	216,026	195,530	215,806	229,712	270,622
21-22	208,463	211,442	196,589	221,209	243,089
23-25	300,155	331,509	300,051	332,522	358,700
26-35	736,625	967,270	1,110,770	1,098,170	1,109,820
Females					
17-18	186,749	183,019	205,300	226,713	260,603
19-20	192,798	190,607	210,342	223,296	262,507
21-25	454,418	493,021	486,755	538,906	582,619
26-35	687,644	876,216	1,000,360	1,032,910	1,078,470
Totals					
Male	1,668,730	1,891,398	2,036,327	2,115,893	2,253,093
Female	1,521,609	1,742,863	1,902,757	2,021,825	2,184,199
All	3,190,339	3,634,261	3,939,084	4,137,718	4,437,292

Table 4

Other Spanish Origin Population Projections by Sex and Age

Age	Year				
	1980	1985	1990	1995	2000
Males					
17-18	81,326	77,352	83,432	90,635	100,012
19-20	82,895	86,040	90,439	90,118	105,300
21-22	78,205	93,320	85,505	91,502	101,649
23-25	112,190	146,472	141,466	148,746	150,607
26-35	299,192	437,965	532,905	555,727	554,739
Females					
17-18	79,193	76,215	81,268	88,052	97,444
19-20	81,885	84,540	89,311	88,796	104,565
21-25	192,669	238,429	230,791	244,238	255,375
26-35	333,256	447,573	543,744	578,621	582,091
Totals					
Males	653,808	841,147	933,747	976,728	1,012,307
Females	687,003	846,757	945,114	999,707	1,039,475
All	1,340,811	1,687,906	1,878,861	1,976,435	2,051,782

Table 5

Total Spanish Origin Accession Rates by Age and Sex, 1980

Age	Population[a]	Army accessions[a]	Accessions per 100,000 population
Male			
17-18	400,264	1,326	331
19-20	403,031	2,055	510
21-22	380,653	891	234
23-25	545,463	818	150
26-35	1,409,067	720	51
Female			
17-18	376,177	136	36
19-20	382,481	249	65
21-25	893,858	211	24
26-35	1,441,557	85	6
Totals			
Male	3,138,478	5,810	1,276
Female	3,094,073	681	131
All	6,232,551	6,491	1,407

[a] Insular and continental Puerto Ricans.

Table 6

Male Army Accession Rates by Age and Ethnicity, 1980

Age	Population	Army accessions	Accessions per 100,000 population
Puerto Rican[a]			
17-18	114,422	592	531
19-20	104,109	891	856
21-22	93,984	469	499
23-25	133,118	475	357
26-35	373,252	447	120
Mexican			
17-18	207,462	532	256
19-20	216,027	895	414
21-22	208,464	305	146
23-25	300,156	258	86
26-35	736,624	202	27
Other Spanish			
17-18	81,380	202	248
19-20	82,895	269	325
21-22	78,205	117	150
23-25	112,189	85	76
26-35	299,191	71	24
Totals			
Puerto Rican	818,885	2,874	2,363
Mexican	1,668,733	2,192	929
Other Spanish	653,860	744	823
All	3,141,478	5,810	4,115

[a]Insular and continental Puerto Ricans.

Table 7

Female Army Accession Rates by Age and Ethnicity, 1980

Age	Population	Army accessions	Accessions per 100,000 population
Puerto Rican[a]			
17-18	110,234	58	53
19-20	107,797	88	82
21-25	246,768	100	41
26-35	420,659	42	10
Mexican			
17-18	186,748	65	35
19-20	192,797	114	59
21-25	454,417	83	18
26-35	687,643	25	4
Other Spanish			
17-18	79,195	13	16
19-20	81,887	47	57
21-25	192,673	28	15
26-35	333,255	18	5
Totals			
Puerto Rican	885,458	288	186
Mexican	1,521,605	287	116
Other Spanish	687,010	106	93
All	3,094,073	681	395

[a]Insular and continental Puerto Ricans.

Table 8

Total Spanish Origin Army Accession Projections by Sex and Age

	Year				
Age	1980	1985	1990	1995	2000
Males					
17-18	1,326	1,217	1,339	1,473	1,641
19-20	2,054	1,959	2,111	2,175	2,526
21-22	891	959	892	966	1,070
23-25	817	956	893	963	1,010
26-35	645	872	1,027	1,043	1,046
Females					
17-18	136	132	143	158	175
19-20	246	250	269	277	321
21-25	211	238	233	250	267
26-35	84	108	125	130	133
Totals					
Males	5,733	5,963	6,262	6,620	7,293
Females	677	728	770	815	896
All	6,410	6,691	7,032	7,435	8,189

Table 9

Puerto Rican Origin Army Accession Projections by Sex and Age[a]

Age	Year				
	1980	1985	1990	1995	2000
Males					
17-18	592	567	536	604	552
19-20	891	925	931	873	928
21-22	469	547	518	483	558
23-25	475	594	599	596	587
26-35	447	581	730	784	773
Females					
17-18	58	55	52	58	53
19-20	88	88	88	82	88
21-25	100	109	105	102	106
26-35	43	52	59	61	59
Totals					
Male	2,874	3,214	3,314	3,340	3,398
Female	289	304	304	303	306
All	3,163	3,518	3,618	3,643	3,704

[a]Insular and continental Puerto Ricans.

Table 10

Mexican Origin Army Accession Projections by Sex and Age

Age	Year				
	1980	1985	1990	1995	2000
Males					
17-18	531	475	546	600	693
19-20	894	809	893	951	1,120
21-22	304	309	287	323	355
23-25	258	285	258	286	308
26-35	199	261	300	297	300
Females					
17-18	65	64	72	79	91
19-20	114	112	124	132	155
21-25	82	89	88	97	105
26-35	28	35	40	41	43
Totals					
Male	2,186	2,139	1,984	2,457	2,776
Female	289	300	324	349	394
All	2,475	2,439	2,308	2,806	3,170

Table 11

Other Spanish Origin Army Accession Projections by Sex and Age

Age	Year				
	1980	1985	1990	1995	2000
Males					
17-18	202	192	207	225	248
19-20	269	280	294	293	342
21-22	117	140	128	137	152
23-25	85	111	108	113	114
26-35	72	105	128	133	133
Females					
17-18	13	12	13	14	16
19-20	47	48	51	51	60
21-25	29	36	35	37	38
26-35	17	22	27	29	29
Totals					
Male	745	828	865	901	989
Female	106	118	126	131	143
All	851	946	991	1,032	1,132

Table 12

Male ESL-Eligible[a] (LEP)[b] Rates by Age and Ethnicity

Age	Ethnic Group			
	All Spanish Origin	Puerto Rican	Mexican	Other Spanish
17-18	.0912	.1858	.0094	.0297
19-20	.2128	.4231	.0089	.1933
21-22	.2862	.4542	.0296	.2820
23-25	.2228	.3074	.0232	.3529
26-35	.1876	.1745	.0000	.5972

[a]Eligible for Army English-as-a-second-language instruction.
[b]Limited English proficiency.

Table 13

Female ESL-Eligible (LEP) Rates by Age and Ethnicity

Age	Ethnic Group			
	All Spanish Origin	Puerto Rican	Mexican	Other Spanish
17-18	.0294	.0690	.0000	.0000
19-20	.0482	.1364	.0000	.0000
21-25	.0758	.1100	.0000	.1724
26-35	.0476	.0930	.0000	.0000

Table 14

Total Spanish Origin Male ESL-Eligible (LEP) Projections by Age
(Adjusted to TRADOC Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	156	143	157	173	193
19-20	563	537	578	596	692
21-22	328	353	328	356	394
23-25	234	274	256	276	290
26-35	156	211	248	252	253
Total	1,437	1,518	1,567	1,653	1,822

Table 15

Total Spanish Origin Female ESL-Eligible (LEP) Projections by Age
(Adjusted to TRADOC Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	5	5	5	6	7
19-20	15	16	17	17	20
21-25	21	23	23	24	26
26-35	5	7	8	8	8
Total	46	51	53	55	61

Table 16

Puerto Rican Male ESL-Eligible (LEP) Projections by Age
(Adjusted to TRADOC Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	142	136	128	144	132
19-20	485	504	507	476	506
21-22	274	320	303	282	326
23-25	188	235	237	236	232
26-35	100	131	164	176	174
Total	1,189	1,326	1,339	1,314	1,370

Table 17

Puerto Rican Female ESL-Eligible (LEP) Projections by Age
(Adjusted to TRADOC Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	5	5	5	5	5
19-20	15	15	15	14	15
21-25	14	15	15	14	15
26-35	5	6	7	7	7
Total	39	41	42	40	42

Table 18

Mexican Male ESL-Eligible (LEP) Projections by Age
(Adjusted to TRADOC Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	6	5	6	7	8
19-20	10	9	10	11	13
21-22	12	12	11	12	14
23-25	8	9	8	9	9
26-35	0	0	0	0	0
Total	36	35	35	39	44

Table 19

Other Spanish Male ESL-Eligible (LEP) Projections by Age
(Adjusted to TRADOC Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	8	7	8	9	9
19-20	67	70	73	73	85
21-22	42	51	46	50	55
23-25	39	50	49	51	51
26-35	55	81	98	102	102
Total	211	259	274	285	302

Table 20

Other Spanish Female ESL-Eligible (LEP) Projections by Age
(Adjusted to TRADOC Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	0	0	0	0	0
19-20	0	0	0	0	0
21-25	6	8	8	8	8
26-35	0	0	0	0	0
Total	6	8	8	8	8

Table 21

Total Spanish Origin Male ESL-Eligible (LEP) Projections by Age
(Adjusted to Alternative Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	225	207	228	250	279
19-20	815	777	837	863	1,002
21-22	475	512	476	515	571
23-25	339	397	371	400	419
26-35	226	305	359	365	366
Total	2,080	2,198	2,271	2,393	2,637

Table 22

Total Spanish Origin Female ESL-Eligible (LEP) Projections by Age
(Adjusted to Alternative Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	7	7	8	9	10
19-20	22	22	24	25	29
21-25	30	34	33	35	38
26-35	7	10	11	12	12
Total	66	73	76	81	89

Table 23

Puerto Rican Male ESL-Eligible (LEP) Projections by Age
(Adjusted to Alternative Control Total)

Age	Year				
	1980	1985	1990	1995	2000
17-18	204	196	185	209	191
19-20	703	729	734	688	732
21-22	397	463	439	409	472
23-25	272	340	343	341	336
26-35	145	189	237	255	251
Total	1,721	1,917	1,947	1,902	1,982

Table 24

Puerto Rican Female ESL-Eligible (LEP) Projections by Age
(Adjusted to Alternative Control Total)

Age	Year				
	1980	1985	1990	1995	2000
17-18	7	7	7	7	7
19-20	22	22	22	21	22
21-25	21	22	22	21	22
26-35	7	9	10	11	10
Total	57	60	61	60	61

Table 25

Mexican Male ESL-Eligible (LEP) Projections by Age
(Adjusted to Alternative Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	9	8	10	11	12
19-20	15	13	15	16	19
21-22	17	17	16	18	20
23-25	25	28	25	28	30
26-35	0	0	0	0	0
Total	66	66	66	73	81

Table 26

Other Spanish Male ESL-Eligible (LEP) Projections by Age
(Adjusted to Alternative Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	11	11	11	12	14
19-20	97	101	106	106	123
21-22	61	74	67	72	80
23-25	56	73	71	74	74
26-35	72	105	128	133	133
Total	297	363	383	397	424

Table 27

Other Spanish Female ESL-Eligible (LEP) Projections by Age
(Adjusted to Alternative Control Total)

	Year				
Age	1980	1985	1990	1995	2000
17-18	0	0	0	0	0
19-20	0	0	0	0	0
21-25	9	12	12	12	12
26-35	0	0	0	0	0
Total	9	12	12	12	12

Table 28

Comparison of Total U.S. Population and Spanish Origin Population[a] (Ages 17-35) in 1980 and 2000

	1980			2000		
	Total U.S.[b]	Spanish origin[c]	Spanish origin as percentage of total U.S.	Total U.S.[d]	Spanish origin[c]	Spanish origin as percentage of total U.S.
Males	37,668,000	2,664,081	7.1	34,894,000	3,753,496	10.8
Females	37,424,000	2,582,964	6.9	34,002,000	3,669,586	10.8
Total[e]	75,091,000	5,247,765	7.0	68,895,000	7,423,082	10.8

[a] Does not include insular Puerto Ricans.
[b] Calculated from figures in Miller (1983), p. 9.
[c] Calculated from figures in Bouvier, Davis, and Haupt (1983).
[d] Calculated from figures in U.S. Bureau of the Census (1982), p. 11.
[e] Totals may not equal sum of males and females due to rounding.

Table 29

Comparison of Total U.S. Population and Black Population (Ages 17-35) in 1980 and 2000

	1980[a]			2000[b]		
	Total U.S.	Black	Black as percentage of total U.S.	Total U.S.	Black	Black as percentage of total U.S.
Males	37,668,000	4,449,000	11.8	34,894,000	5,152,000	14.8
Females	37,424,000	4,819,000	12.9	34,002,000	5,181,000	15.2
Total[c]	75,091,000	9,268,000	12.3	68,895,000	10,335,000	15.0

[a] Calculated from figures in Miller (1983), p. 9.
[b] Calculated from figures in U.S. Bureau of the Census (1982), p. 11.
[c] Totals may not equal sum of males and females due to rounding.

Table 30

Comparison of Total Army Accessions and Spanish Origin Army Accessions circa 1980 and circa 1990

1980			1990		
Total	Spanish origin[a]	Spanish origin as percentage of total	Total[b]	Spanish origin[a]	Spanish origin as percentage of total
133,186	6,410	4.8	135,300	7,032	5.2

[a] Calculated from accession rates and multiplied by projections in Bouvier, Davis, and Haupt (1983).
[b] Calculated from figures in Elton (1983).

Table 31

Comparison of Total Spanish Origin Accessions and
LEP Spanish Origin Accessions in 1980 and 2000
(Adjusted to TRADOC Control Total)

	1980			2000		
	Total	LEP	LEP as percentage of total	Total	LEP	LEP as percentage of total
Males	5,733	1,437	25.1	7,293	1,822	25.0
Females	677	46	6.8	896	61	6.8
Total	6,410	1,483	23.1	8,189	1,883	23.0

Table 32

Comparison of Total Spanish Origin Accessions and
LEP Spanish Origin Accessions in 1980 and 2000
(Adjusted to Alternative Control Total)

	1980			2000		
	Total	LEP	LEP as percentage of total	Total	LEP	LEP as percentage of total
Males	5,733	2,080	36.3	7,293	2,637	36.2
Females	677	66	9.8	896	89	9.9
Total	6,410	2,146	33.5	8,189	2,726	33.3